PROGRESSIVE ARCHITECTURE

PENCIL POINTS

CUSTOM-BUILT HOUSES

READY-BUILT HOUSES

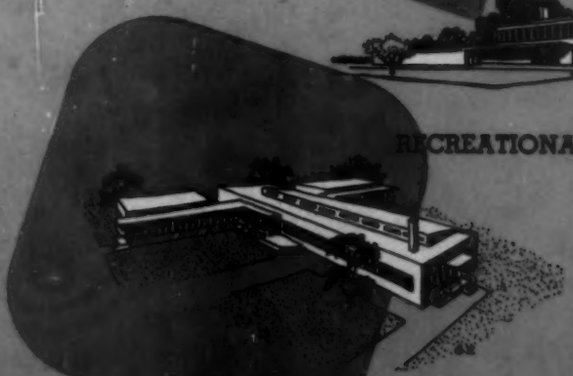
PREFABRICATED HOUSES

PLANNED COMMUNITIES

THE CHALLENGE OF THE HOUSING CRISIS

EDUCATIONAL FACILITIES

RECREATIONAL FACILITIES



HEALTH FACILITIES

JUNE 1946

Jenkins PRACTICAL PIPING LAYOUTS 11

How to plan a DIESEL ENGINE FUEL OIL SYSTEM

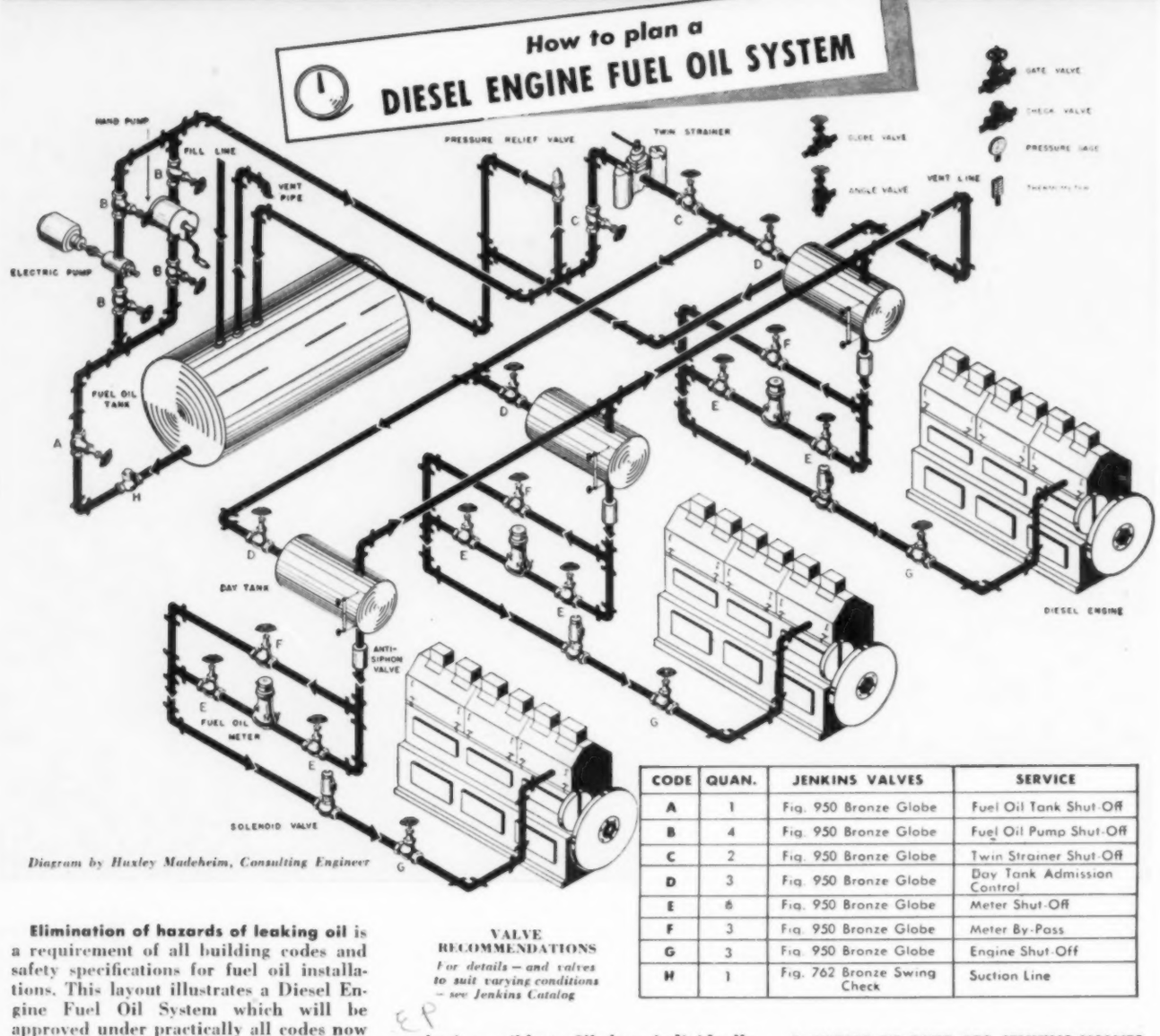


Diagram by Huxley Madeheim, Consulting Engineer

CODE	QUAN.	JENKINS VALVES	SERVICE
A	1	Fig. 950 Bronze Globe	Fuel Oil Tank Shut-Off
B	4	Fig. 950 Bronze Globe	Fuel Oil Pump Shut-Off
C	2	Fig. 950 Bronze Globe	Twin Strainer Shut-Off
D	3	Fig. 950 Bronze Globe	Day Tank Admission Control
E	6	Fig. 950 Bronze Globe	Meter Shut-Off
F	3	Fig. 950 Bronze Globe	Meter By-Pass
G	3	Fig. 950 Bronze Globe	Engine Shut-Off
H	1	Fig. 762 Bronze Swing Check	Suction Line

VALVE RECOMMENDATIONS
For details — and valves to suit varying conditions — see Jenkins Catalog

Elimination of hazards of leaking oil is a requirement of all building codes and safety specifications for fuel oil installations. This layout illustrates a Diesel Engine Fuel Oil System which will be approved under practically all codes now in effect.

With no direct exposure of the large isolated storage tank in the engine room proper, the principal danger of oil leakage is removed. Oil is pumped from the main storage tank to the individual 50-gallon Day Tanks that are provided with overflows to return excess oil back to the storage tank in the event of over-pumping. A pressure relief valve in the discharge line from the oil pumps returns the oil when excess pressure develops.

Control valves on each of the Day Tanks make it possible to fill them individually or in parallel.

Other types and pressure ranges of Jenkins Valves can be used for this type of layout, according to the factors involved. Consultation with accredited piping engineers and contractors is recommended when adapting these suggestions to your own requirements, or when planning any major piping installation.

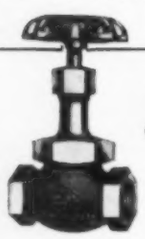
Copies of Layout No. 11, enlarged, with additional information, will be sent on request . . . also future Piping Layouts. Just fill out and mail coupon.

A CHOICE OF OVER 600 JENKINS VALVES

To save time, to simplify planning, to get the advantage of Jenkins specialized valve engineering experience,—select all the valves you need from the Jenkins line, fully described in the Jenkins Catalog, No. 76. It's your best assurance of the *lowest cost in the long run.*

Jenkins Bros., 80 White Street, New York 13; Bridgeport; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal; London.

LOOK FOR THIS JENKINS **DIAMOND MARK**
Since Jenkins Bros 1864



JENKINS VALVES

For every Industrial, Engineering, Marine, Plumbing-Heating Service . . . in Bronze, Iron, Cast Steel, and Corrosion-resisting Alloys . . . 125 to 600 lbs. pressure.

Sold Through Reliable Industrial Distributors Everywhere

JENKINS BROS., 80 White St., New York 13, N. Y.
Please send me a reprint of Piping Layout No. 11, and future Layouts as they become available.

Name .....
Company .....
Address .....
.....

PROGRESSIVE ARCHITECTURE

PENCIL POINTS

JUNE 1946

6

EDITORIAL STAFF

Kenneth Reid	Editorial Adviser
Thomas H. Creighton	Editor
Charles Magruder	Managing Editor
George A. Sanderson	Feature Editor
Frank G. Lopez, Jr.	Technical Editor
Edith Lamar Eileen Feus	Assistant Editors
Gene Hawley	Art Director
Elmer A. Bennett	Drafting

EXECUTIVE AND BUSINESS STAFF

Philip H. Hubbard	Publishing Director
John G. Belcher	Associate Publishing Director
John Zellner	Circulation Manager

Published monthly by REINHOLD PUBLISHING CORPORATION, 330 West 42nd Street, New York 18, N.Y., U.S.A. Ralph W. Reinhold, Chairman of the Board; Philip H. Hubbard, President; H. Burton Lowe, Executive Vice President and Treasurer; Gilbert E. Cochran, Vice President and Secretary; Francis M. Turner, Vice President; William P. Winsor, Vice President. Executive and editorial offices: 330 West 42nd Street, New York 18, N. Y. Subscriptions payable in advance: 1 year, $3.00; 2 years, $5.00 in U. S. and Possessions, Canada, Cuba, Mexico, Central and South America; 1 year, $5.00 in all other countries. Single copies, $1.00. Printed by Lotus Press Inc., 508 West 26th St., New York 1, N. Y.

Copyright 1946, Reinhold Publishing Corp. Trade Mark Reg. All rights reserved.

Reentered as second class matter, October 22, 1945, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Volume XXVII, No. 6, June, 1946. Indexed in Art Index.

VIEWS: Letters 8

JOBS AND MEN: Men Wanted; Jobs Wanted 10

NOTICES: 12, 134

THIS MONTH: Our Authors; Next Month 18

MAKE THAT HOUSING GOOD!: Editorial by Kenneth Reid 47

THE ARCHITECT AND THE HOUSING CRISIS: by Wilson W. Wyatt 48

READY-BUILT HOUSES: by Frank W. Cortright 50

"Wedgwood," Seattle, Washington: Thomas, Grainger & Thomas, Architects; Albert Balch and Maury Setzer, Developers and Builders 51

CUSTOM-BUILT HOUSES 52

House in Atherton, California: William F. Hempel, Architect 53

House in Dutchess County, New York: Daniel Schwartzman, Architect 58

PREFABRICATED HOUSES: by Henry H. Steidle 60

Complete, Contemporary, and Prefabricated: Solar Homes Co., Brattleboro, Vt., Donald Durell and Assoc., Designers and Builders 60

PLANNED COMMUNITIES: by Henry S. Churchill 62

FPHA Project to Serve a Naval Air Station, Astoria, Oregon: Van Evera Bailey, Architect 63

Plan for Future Development of Orinda, Calif.: Study conducted by the School of Architecture, University of California; under the direction of Prof. Howard Moise, Architect 66

EDUCATIONAL FACILITIES: by Ray L. Hamon 70

Haughton High School, Haughton, Louisiana: Samuel G. Wiener, Architect 71

RECREATIONAL FACILITIES: by Howard Braucher 72

Veterans Memorial Building, Lapeer, Michigan: Saarinen, Swanson and Saarinen, Architects 73

HEALTH FACILITIES: by V. M. Hoge 74

The Small Health Center-Hospital: Hospital Facilities Section, U. S. Public Health Service 75

SELECTED DETAILS: 77, 78, 79, 80

MATERIALS AND METHODS

COOPERATION BETWEEN ARCHITECTS AND ENGINEERS: by Paul Weidlinger 81

FACTORY NOISE: by Hale J. Sabine and Allen Wilson, Celotex Corp. 87

CORROSION AND PIPE SELECTION: by Henry L. Shuldener, President, Water Service Laboratories, N. Y. 91

MANUFACTURERS' LITERATURE: Current manufacturers' publications 96

PRODUCTS: Monthly list of new products, plus comment on new developments 98

REVIEWS: Book Notes by Lawrence E. Mawn, Davidson-Smull 108

GUIDE: to Published Work 116

OBSERVATIONS: by Thomas H. Creighton 152

COVER: Composition by Gene Hawley

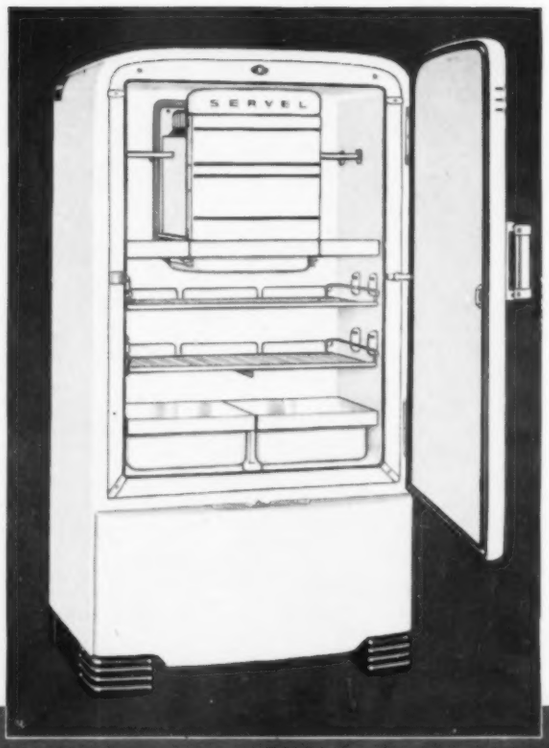
TENANTS APPRECIATE SERVEL'S SILENCE

. . . OWNERS PROFIT BY SERVEL'S DEPENDABILITY

Both tenants and owners win when you specify Gas Refrigeration in the apartment houses you design or build. For, as more than 2,000,000 users have proved, Servel provides noise-free, wear-free refrigeration throughout its long life. Gas Refrigerators, installed 10, 12 or 15 years ago, are still giving the same silent, dependable refrigeration they did when new.

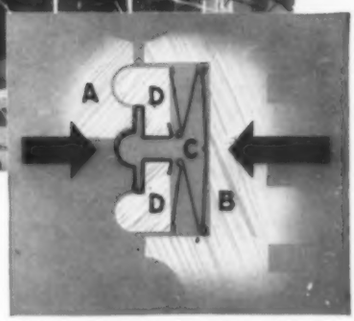
This unmatched performance, year in and year out, is the result of Servel's simplicity of operation. There is not a *single moving part* in its freezing system. No machinery to cause noise or wear. A tiny gas flame does all the work . . . circulates the refrigerant that produces constant cold and sparkling cubes of ice.

So plan now to provide outlets for silent, long-lasting Servel Gas Refrigerators in your current designs and construction work. For complete information on this famous refrigerator, consult Sweet's Catalog. Or write today to Servel, Inc., Evansville 20, Indiana.



STAYS SILENT
LASTS LONGER

Servel GAS REFRIGERATOR



NEW WEATHER-TIGHTNESS—Made of wood—in itself a nonconductor of heat and cold—the new Silentite has "floating" chemically treated wood sliding bars, and these are seated on full-length double Z-type bronze weather-strips. Sash (A) operates against sliding bead (D), which presses against metal Z-type weather-stripping (C) in frame (B). The neu design of the meeting rail overcome the problem of weather-stripping betwee two window sections!

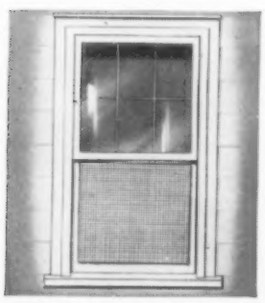
A *New Achievement* IN WINDOW WEATHER-TIGHTNESS ... NEW SELF-FITTING SILENTITE

● No window can be modern unless it is truly weather-tight. And in the new Self-Fitting Silentite, Curtis engineers have utilized entirely new principles to provide complete weather-tightness in a double-hung window. The weather-stripping in the jamb channels is *self-fitting* (See diagram). A new design of meeting rail overcomes the problem of weather-stripping the space between the two window sections. An improved head weather-strip is employed. Extreme weather-tightness is obtained between frame members and frame and wall. There are no through cuts in jambs, thus eliminating air leakage. The new Silentite is 20% more weather-tight than the old unit. Weather-tightness is only *one* of the many features of this new Silentite—below are some of the others.

1865 CURTIS WOODWORK
SILENTITE
PRE-FIT
the "Insulated" window

GREATER BEAUTY—Twelve designs of windows from which to choose—numerous styles of attractive bays, corner windows, window groups, all are yours with the new Silentite Self-Fitting Window!

In Canada: W. C. Edwards & Co., Ltd., Ottawa



DOUBLE UTILITY—Removal and storage of storm sash and screens is eliminated with the new convenient Curtis combination screen and storm sash unit. Or, separate pre-fit screens and storm sash, hung from the inside, may be used.

NEW SAFETY LOCK—The new Self-Fitting Silentite locks in a closed or partly open position—new safety from intruders when ventilation is desired. New-style sash lock—marked "Silentite"—furnished with each window unit.

SIMPLE INSTALLATION—See how easy it is to install the new Silentite Self-Fitting Window! The sash is put in with minimum effort—yet, once installed, is firmly in place. Here's a big economy in installation.

CURTIS COMPANIES SERVICE BUREAU
PA-6S Curtis Building
Clinton, Iowa

Gentlemen: Please send me full information on the new Silentite Window line.

Name.....

Address.....

City.....*State*.....

VIEWS

COMPETITION MAIL

ADHERE TO RULES!

Dear Editor:

Your interesting editorial regarding the permanent home for the U.N.O. prompts the suggestion on my part that, by all means, hold an international competition to select the architect(s) to design this new international establishment for the maintenance of peace in the world of the future.

I would have a jury that could not pick (behind the scenes) favorites of their own to award the prizes. I would make it a free for all competition, but set a time limit on the submission of applications to compete. I would also pay those who do compete a sum sufficient to compensate them for the great amount of time and labor expended in a competition of this character. I would insist that "mandatory" provisions of the program be adhered to strictly by *all* the competitors.

B. H. WHINSTON, A.I.A.
New York, N. Y.

THE TRUE SPIRIT

Dear Editor:

I feel that the architecture of the U.N.O. home should be in the true spirit of architecture, not tainted with eclecticism, nor hidebound by outmoded traditionalism. To me this is most important as the architecture of these buildings can raise the banner of architecture as a beacon light for the world or can hobble its natural growth and expression. . .

With this in mind I heartily disagree with your suggestion for a competition and offer an alternative solution.

My objections to the competition are these. The design selected by a jury can obviously not be better than the average opinion of the jury. The average of the jury must therefore be less than the best opinion in the jury. You may say that the jury will be made up of our best architectural minds, but who decides who is the jury? Surely the U.N.O. delegates are not qualified to pick the jury nor to pick the design. A solution by a competition and jury can only be a backward step in architecture, as was the solution for the League of Nations buildings.

I offer as a solution for this problem having the entire project designed and executed by the one architect who stands head and shoulders above all others, the greatest architect in the world today, and beyond a doubt the greatest architectural genius of all times—Frank Lloyd Wright.

FOSTER RHODES JACKSON, A.I.A.
Mystic, Conn.

A.I.A. CHAPTER APPROVES

Dear Editor:

I can hardly visualize how such an important building program could be effected without a wide-open competition, tho in deference to the prominent architects that seem to be interested in this intricate problem, I would not try to advise how such a competition should be conducted.

At a meeting of the local chapter held last evening, I brought the matter up, resulting in a motion being passed by this chapter going on record as favoring such a competition, our secretary being instructed to convey such action to Mr. Eric Gugler, Chairman for the A.I.A. Competitions.

LOUIS G. DITTOE, A.I.A.
Cincinnati, Ohio

SWEDISH INTEREST

Dear Editor:

We have every reason to think that Swedish architects would be interested in a competition for the palace of the United Nations Organization, considering, especially, that some Swedish architects were among the prize winners in the competition for "The Palace of Peace" in Geneva after the first world war.

CARL MELIN
Svenska Arkitekters Riksforbund
Stockholm, Sweden

SOMETHING HAPPENED

Dear Editor:

I am sorry to ask you to discontinue my subscription to your magazine. For many years I enjoyed it, but about the time I last renewed for five years something happened, and since then the useful information I find in it is so mingled with distasteful text and illustrations that I prefer to get along without it. I can anticipate your reply, so do not bother to write it.

HAROLD A. RICH
Architect
West Newton, Mass.

RIGHT WAY OF PLANNING

Dear Editor:

Just reading in the December issue of PROGRESSIVE ARCHITECTURE the review of Hayek's book, *The Road to Serfdom*, I congratulate you and Davidson-Smull on the firm and clear reply to the many fallacies contained in it. In our country the *Reader's Digest* Spanish edition included a condensation of the book and promptly found echo in one of our greatest newspapers where, in a Sunday issue, was published an unusual bibliographical commentary even though the book was not yet available. The same day I sent to a newspaper's director a letter putting in evidence the caution introduced by the author about planning, and I indicated to him the distinction between fascist methods of making plans despite human democratic and vitalistic feelings (here we lack a public conscience about planning) and the right way of planning on which rests the future of world's organic integration.

JOSE M. J. PASTOR
Buenos Aires, Argentina

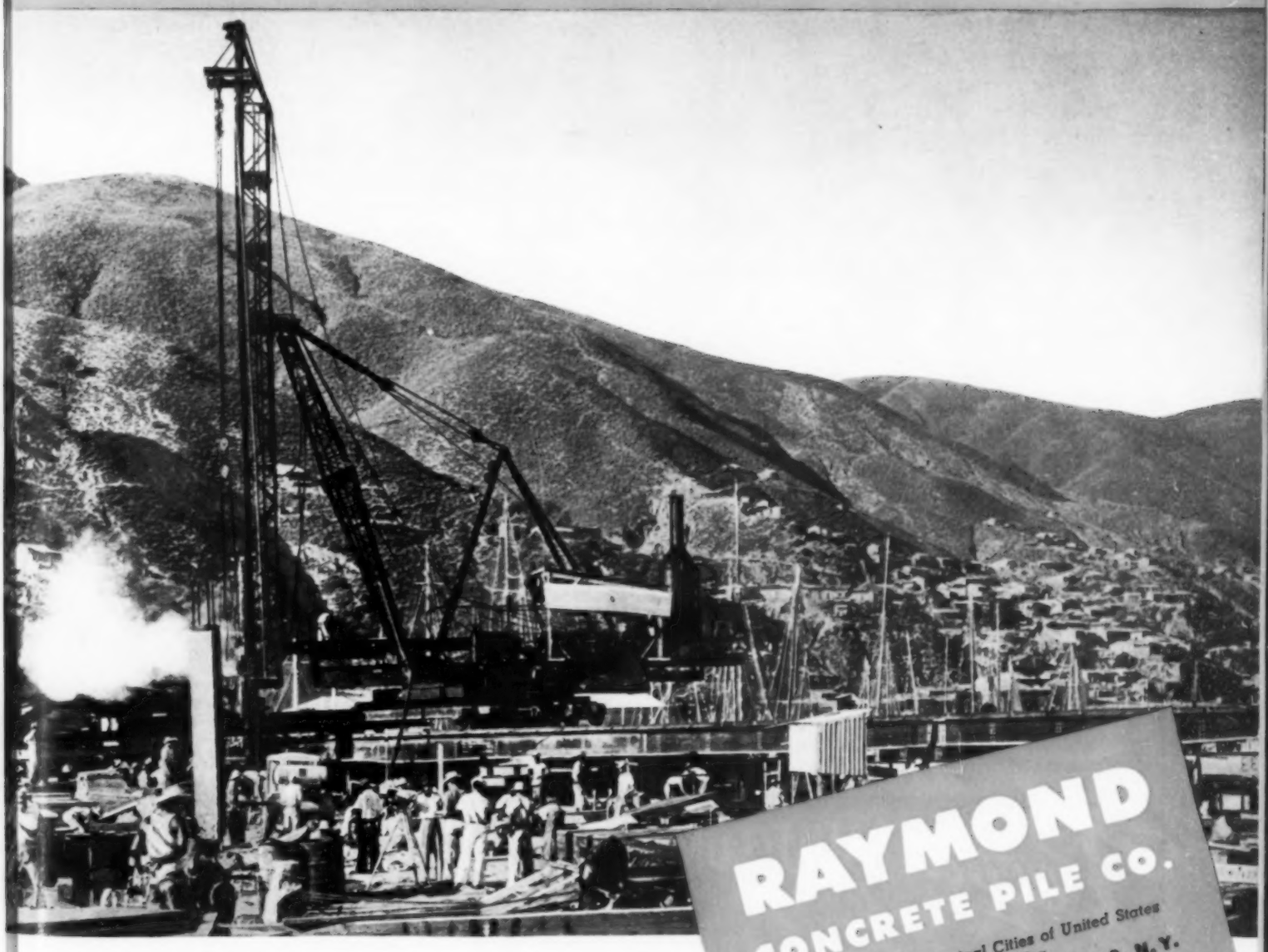
"Hey! Boss! I just designed a push button house with a push button to push the push buttons."

WORLD-WIDE SERVICE

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ For almost half a century, the Raymond Company has successfully completed more than 11,000 contracts in the United States and foreign lands. As a result of this world-wide experience, Raymond has built up a strong backlog of "know-how" which is yours to command.

Write, wire, cable or phone for a Raymond engineer to discuss your next foundation project with you.

Wharf at La Guaira, Venezuela



THE SCOPE OF RAYMOND'S ACTIVITIES includes every recognized type of pile foundation – concrete, composite, precast, steel, pipe and wood. Also caissons, construction involving shore protection, ship building facilities, harbor and river improvements and borings for soil investigation.

RAYMOND
CONCRETE PILE CO.

Branch Offices in Principal Cities of United States and Latin America

140 CEDAR STREET, NEW YORK 6, N. Y.

JOBS AND MEN

NOTICE: *Advertisements for this section must be addressed to* Jobs and Men, C/O PROGRESSIVE ARCHITECTURE, 330 West 42nd St., New York 18, N. Y. Legible copy, accompanied by check or money order for $3.00, will be accepted not later than the 10th of month preceding publication. Insertions may not exceed 50 words.

MEN WANTED

ARCHITECTS — Tennessee Valley Authority has openings in design department at Knoxville, Tenn., for work on industrial, recreational, and power buildings. Salaries range from $3,000 to $4,300 per annum, depending on training and experience, with provisions for automatic increases based on satisfactory performance. Candidates write Tennessee Valley Authority, Personnel Office, Knoxville, Tenn.

SEVERAL ARCHITECTURAL DRAFTSMEN, thoroughly experienced, able to prepare preliminaries, working drawings, etc., familiar all phases architectural drafting. Must think, draw along modern trend. Work on postwar theaters and diversified projects. Excellent opportunity for permanent position. Write education, experience, salary, to M. J. DeAngelis, R. A., 1404-1405 Temple Bldg., Rochester, N. Y.

In Industrial Plants

PECORA CALKING COMPOUND

Time tested for 38 years, Pecora Calking Compound is impervious to heat, cold and moisture, or acid fumes. This makes it the ideal calking material to use in industrial plants where temperature variations and fumes would have a deleterious effect on a compound less rugged, less qualified.

For Pecora Calking Compound will not dry out, crack or chip when properly applied. It will adhere to stone, glass, metal and wood, and adjust itself to variations in expansion and contraction.

There are these six importat benefits when Pecora Compound is used for sealing joints around window and door frames and for pointing up masonry:

- **FUEL SAVING**
- **FREEDOM FROM NEEDLESS DRAFTS**
- **NO MOISTURE SEEPAGE IN JOINTS**
- **NO NEEDLESS DUST INFILTRATION**
- **BETTER TEMPERATURE CONTROL FOR AIR CONDITIONING**
- **BETTER OCCUPANCY CONDITIONS**

See SWEET'S for suggested specifications, or write us for descriptive folder and detailed information.

Pecora PAINT COMPANY, INC.

• Established 1862 by Smith Bowen
• Member of Producers' Council

SEDGLEY AVENUE & VENANGO STREET • PHILADELPHIA 40, PENNA.

ROOF COATING • WATERPROOFING • DAMPPROOFING • SASH PUTTIES

ARCHITECTURAL DRAFTSMEN AND SPECIFICATION WRITERS—Draftsmen experienced in commercial and industrial work. Two experienced specification writers needed. Top salaries. Albert C. Martin and Associates, Architects and Engineers, 333 South Beaudry, Los Angeles 13, Calif.

ASSISTANT SPECIFICATION WRITER — Practical man with broad, general experience in building construction work (not mechanical). State qualifications and salary expected. Specification Department, Albert Kahn Associated Architects and Engineers, Inc., 345 New Center Bldg., Detroit 2, Mich.

SENIOR ARCHITECTURAL DRAFTSMAN capable of handling any work including position of chief draftsman, in a small but progressive office in Texas. For the right man, this position will lead to an associate or partnership in a well established practice. Box 266, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMAN, Commercial buildings. Write stating age, experience, and salary desired. Box 273, PROGRESSIVE ARCHITECTURE.

JOBS WANTED

ARCHITECTURAL DESIGNER-DRAFTSMAN —29 years old, energetic, capable, 12 years' valuable experience, including residential, commercial, and industrial work, new and rehabilitation. Also housing and town planning. Desires connection with progressive individual or firm with good future prospects. Available June 1st in New York or Westchester County. Box 267, PROGRESSIVE ARCHITECTURE.

N.C.A.R.B. REGISTERED ARCHITECT—20 years' diversified experience. All types of buildings, desires position as chief architect or contact leading to partnership with progressive firm. Good designer, draftsman, and renderer. Box 268, PROGRESSIVE ARCHITECTURE.

CHIEF ARCHITECT, now in South America. 18 years' varied experience including own office, design, handling men and material. Interested in long-term association with definite lucrative future. Location immaterial. Reply with full particulars, stating living costs, living and working conditions, remuneration, etc. Box 269, PROGRESSIVE ARCHITECTURE.

FOUR BRITISH ARCHITECTURAL STUDENTS—about to take final examinations of the R.I.B.A., desire positions in American architects' offices for six months from March 1947. Qualifica-

(Continued on page 12)

Whether you run a business, supervise a store or plan an airport, if you're interested in figures you'd better meet Kentile—the floor that lasts longer, looks better—costs less!

Consider these facts when you consider your flooring:

GREASEPROOF KENTILE
costs only slightly more than regular Kentile—and can be used only where needed.

IS IT HANDSOME? With Kentile you can have your own floor design. Kentile true-color squares are laid in the color combinations and patterns *you* decide will serve you best!

IS IT PRACTICAL? And how! It shows no scars, absorbs no moisture. Kentile cushions sounds, is resilient underfoot, and sure-treaded.

WHAT'S THE UPKEEP? Practically none! Kentile cleans with soap and water mopping, and colors stay true. When floor plans are altered or replacements needed, all you do is add new squares—without ripping up the floor.

WHAT'S THE COST? Kentile is asphalt tile—the lowest cost long wearing resilient tile flooring sold, foot by foot, every time. Installation is so easy it costs less installed. And because it wears longer it is incomparably cheaper.

THE WHOLE STORY!

Altogether, Kentile offers 15 different advantages. They're all told in the new, richly illustrated full-color catalogue that shows all the Kentile colors and some of the countless patterns possible—plus full-color pictures of Kentile in actual use. Send for your copy today—no obligation.

DAVID E. KENNEDY, INC.
57 Second Avenue, Brooklyn 15, N. Y.
208 Bona Allen Bldg., Atlanta 3, Ga.
778 Natoma St., San Francisco 3, California
58 E. Washington St., Chicago 6, Illinois
452 Statler Bldg., Boston 16, Mass.
614 Olympia Road, Pittsburgh 11, Pa.
1211 National Broadcasting Co. Bldg., Cleveland 14, Ohio

JOBS AND MEN

(Continued from page 10)

tions include practical knowledge. Definite jobs required soon to enable booking passage. Owing to immigration laws, payment required to cover living costs. Box 270, PROGRESSIVE ARCHITECTURE.

TOP ARCHITECTURAL MAN, chief draftsman, designer, field man; fast, best N. Y. offices, age 39, married, wishes to leave N. Y. and locate in California. Can handle clients. All types of work. Minimum salary $125 weekly. Box 272, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DESIGNER-SUPERINTENDENT. 15 years' broad experience public and institutional buildings, desires substantial connection with established office. Box 274, PROGRESSIVE ARCHITECTURE.

NOTICES

LT. COM. ELDREDGE SNYDER, New York, announces that he has been released from active duty in the United States Naval Reserve and has re-established his practice as architect at 101 Park Ave.

STAINBACK AND SCRIBNER have resumed the practice of architecture in partnership, with offices at 706 Lyons Court Lane, Charlottesville, Va.

NOW AVAILABLE

the original inside screens that roll up and down like a window shade

ROLSCREENS in a house are a "trademark" of good planning. They are a year 'round advertisement for the architect who specifies them. They help to keep a house up-to-date and protect its salability over the years. A big part of your business is selling CONVENIENCE. ROLSCREENS help you to do it like no other window appurtenance.

EASY TO INSTALL
ON ALL TYPES OLD AND NEW WINDOWS

Double-Hung Application Casement Application

No special mill work, no special fitting or cutting required. Installation made to either of the above windows quickly and easily . . . thanks to new type guide channels.

GOOD DELIVERIES — ROLSCREEN orders are being filled and shipped with reasonable promptness. Materials are back to prewar quality standards. On your next new or remodeling job, include ROLSCREENS. WRITE for interesting FREE literature and planning information — or see ROLSCREEN Data in Sweet's.

Address: 866 Main Street

CONVENIENCE of ROLSCREENS SELLS ON SIGHT

Once in place . . . always in place. That's Rolscreens! No putting up! No taking down! No storing! No painting! No seasonal repairs! Installed and operated on the inside. Inconspicuous. They preserve the beauty of clear, sparkling glass. For *all* types of windows — both old and new construction.

10 YEAR GUARANTEE

This is your assurance that your clients will be satisfied and enthusiastic about ROLSCREENS over the years.

BUILDING SPECIALTY DEALERS

A number of choice ROLSCREEN territories are open. Write for details if interested.

☆ *Pella* ROLSCREENS ☆

ROLSCREEN COMPANY • PELLA, IOWA

Made by Makers of Famous Pella Venetian Blinds and Casement Windows

HAROLD WOODWARD has reopened offices at 191½ E. Main St., Spartanburg, S. C.

J. NORRIS BARNARD and ALDEN B. WILSON announce the opening of their office, Allied Planners, for the practice of architecture and industrial designing at 1611 Sansom St., Philadelphia 3, Pa.

EDMUND T. STEWART, Architect, has moved his office to 272 North Ave., New Rochelle, N. Y.

JOSEPH CERUTI announces the opening of offices for the practice of architecture at 2915 Detroit Ave., Cleveland 13, Ohio.

NATHAN A. SEIDERMAN announces the removal of his offices to 154 Nassau St., New York 7, N. Y.

The office of ALEXANDER D. CROSETT, Engineer, is now located at 27 William St., New York 5, N. Y.

HAROLD H. FISHER, Architect, announces the opening of his office at 1605 Industrial Bank Bldg., Detroit 26, Mich., for the practice of church, industrial, commercial, institutional, and residential architecture.

JACK KUSHIN, Architect, has opened offices at 494 Franklin St., Buffalo, N. Y.

M. T. WHITMORE, recently Lt. Col., Corps of Engineers, ETOUSA, announces the opening of his office for the practice of engineering to include design of structures, appraisals, investigations, and consultations on building problems, at 1000 Peachtree St., N.E., Atlanta, Ga.

LOUIS P. RONCOLI has resumed the practice of architecture at 30 LeMoyne Parkway, Oak Park, Ill.

RALPH L. HOLLIS announces the opening of his office for the practice of architecture and architectural engineering at 818 Bitting Bldg., Wichita 2, Kans.

ALAN DAILEY, JOHN W. BRIGGS, AND ROLAND A. YAEGER have become associated for the practice of architecture and will be known as DAILEY, BRIGGS & YAEGER, with offices in the Hiram Sibley Bldg., 311 Alexander St., Rochester 7, N. Y.

O. K. JOHNSON, Consulting Engineer, has opened offices at 638 New England Bldg., Topeka, Kansas.

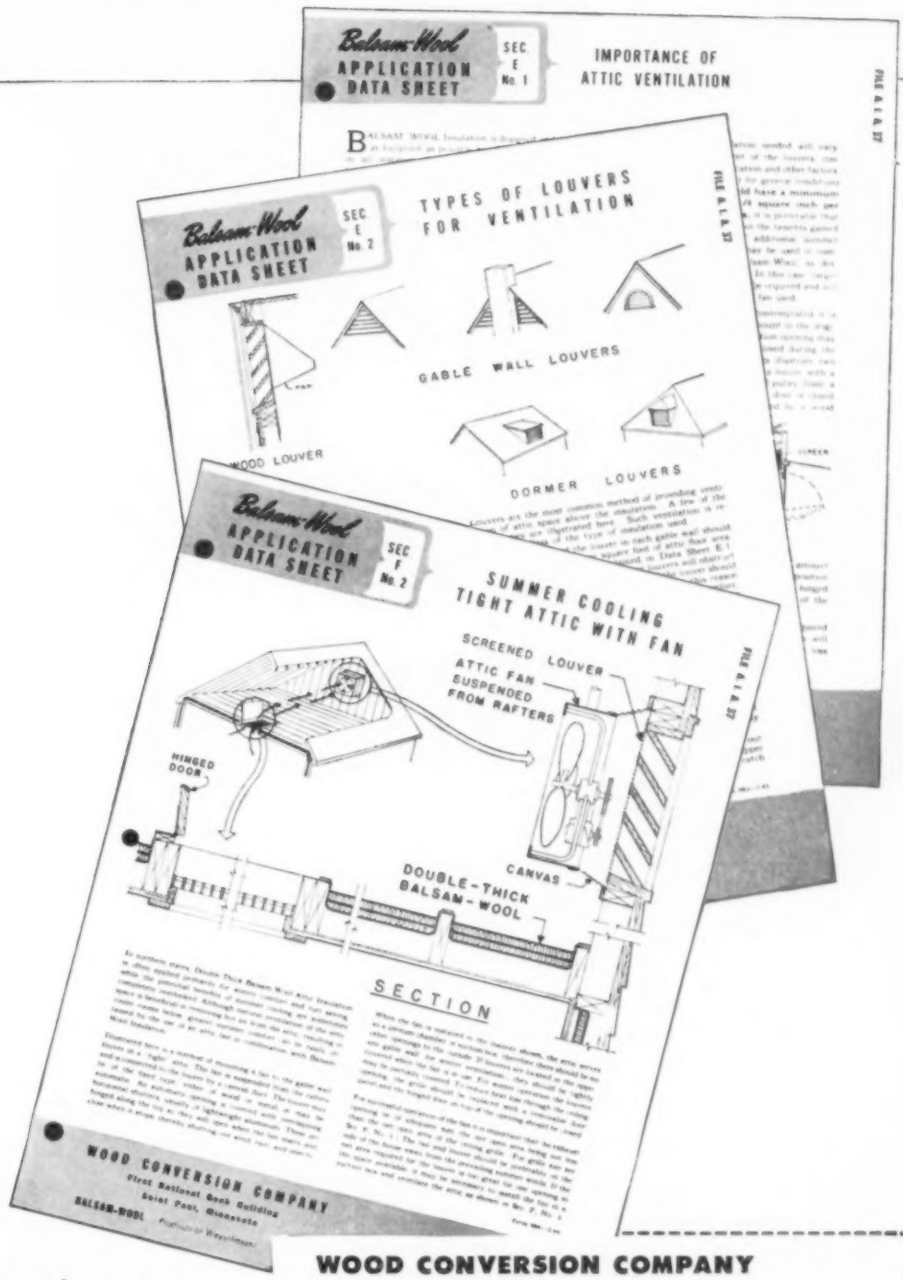
CLIFFORD E. GARNER AND LOUIS E. SHOCH announce their association to practice architecture as GARNER AND SHOCH, Architects, 10 South 18th St., Philadelphia 3, Pa.

DAVID J. ABRAHAMS, Architect, announces that LLOYD W. KENDALL and ISRAEL NIGROSH have become his associates. The firm name will henceforth be DAVID J. ABRAHAMS AND ASSOCIATES, with new offices at 651 Boylston St., Boston 16, Mass.

MARVIN J. NEIVERT, Architect, has moved to new offices at 17 E. 42nd St., New York 17, N. Y.

LATEST "KNOW HOW" ON SUMMER COOLING

Balsam-Wool data sheets!



● You'll want this complete file of Balsam-Wool Data Sheets because it gives you the latest, most complete information on insulation application. Here's a really valuable source of insulation reference data—carefully compiled, accurate and trustworthy. Send today for your set of Balsam-Wool Data Sheets—yours for the asking.

Balsam-Wool

SEALED INSULATION

BALSAM-WOOL • *Products of Weyerhaeuser* • **NU-WOOD**

WOOD CONVERSION COMPANY
Dept. 117-6 First National Bank Building
St. Paul 1, Minnesota

Please send me set of Balsam-Wool Application Data Sheets.

NAME.....

ADDRESS.....

CITY..... STATE.....

THIS MONTH

DONALD P. THOMAS

CLYDE GRAINGER

EDWARD J. BAAR

The firm of Thomas, Grainger & Thomas, Architects, has engaged in general practice for 20 years in Seattle and has been responsible for structures there totaling $20,000,000. Harlan Thomas, F.A.I.A., Dean Emeritus of the School of Architecture, University of Washington, retired from active partnership in 1933. The firm now comprises his former partner, **Clyde Grainger**, A.I.A., graduate of the University of Washington, and **Donald P. Thomas**, A.I.A., graduate of the University of Pennsylvania, and member of the firm since 1924. **Edward J. Baar**, A.I.A., graduate of the University of Washington, who has been with the firm since 1940, became an Associate last year.

The architect of the first of the custom-built houses in this issue started his professional career in Baltimore in the office of Buckler & Fenhagen, following his architectural training at the University of Pennsylvania and L'Ecole Nationale Superieur des Beaux Arts. In addition to his architectural practice in New York, since 1935, **Daniel Schwartzman**, A.I.A., demonstrated an architect's usefulness to the Atomic Bomb scientists by heading the priority division of Kellex Corporation, engineers for the principal plants of the Manhattan District at Oak Ridge, Tenn.

The second custom-built house is by **William F. Hempel**, A.I.A., who has

DANIEL SCHWARTZMAN

NEXT MONTH

● Buildings that serve the workaday needs of buying, selling, servicing, publicizing, and other transactions of business will be featured in our next issue. Ranging from the inner sanctum of a corporation executive to a suburban office building, these will include structures designed by Burge & Stevens, Atlanta; Pietro Belluschi, Portland; Donald Dwight Williams, Seattle; Morris Lapidus, New York; Gruen and Krummeck, Designers, Los Angeles; Julian Von Der Lancken, Architect, with Raymond Loewy Associates, New York; Rudolf Mock, Knoxville; George Fred Keck, Chicago. In size, as well as function, the projects are widely diversified.

● Beginning where most discussions of building codes leave off, George N. Thompson will tell our readers of the Materials and Methods section about constructive measures through which building codes can be improved and refined. This is not the usual critical attack, because the author is more interested in "doing something about it." In the same section there will be two articles on architectural specifications. Ben John Small, whose thesis is that an architectural specification should be reduced to a true contract document, as graphic and free from extraneous material as an architect's drawing, will discuss "Specification Surgery." An example of the type of complete, streamlined specification he advocates will be offered by James D. Beacham, who has prepared, as a filable unit, "Specification for Unit Masonry." This can be a valuable addition to the architect's reference collection.

WILLIAM F. HEMPEL

A well maintained Tile-Tex Asphalt Tile Floor.

THAT PROTECTS YOUR CLIENTS!

Floors get more use and abuse than any other part of a building. It is obvious, therefore, that the cost of keeping floors clean and attractive is an important factor in determining what floor should be used. The location of a floor, the use to which it is put, the volume of traffic over it—all are factors that help determine what kind of a maintenance program is necessary.

In building Tile-Tex Asphalt Tile, we have tried to recognize this fact by providing it with the smoothest, most cleanable surface possible—so that any maintenance program for Tile-Tex Asphalt Tile starts with the advantage of a better, easier-to-clean surface.

Good maintenance on Tile-Tex Asphalt Tile produces results in the form of exceptionally low cost per square foot per year. It is not accomplished by haphazard cleaning and waxing. We have made a careful study of maintenance procedure so that your clients can, with our suggestions, set up maintenance programs that will prolong the life of their Tile-Tex floors. Tile-Tex field representatives are qualified to recommend maintenance programs to fit the specific needs of each installation.

In the new Tile-Tex booklet "Maintenance Data," general instructions for different types of floor areas are outlined for the use of Tile-Tex floor owners. For large institutions, street-level store areas, and large public buildings, surveys by Tile-Tex field men can be had to provide the best and most economical kind of overall maintenance program.

The Tile-Tex Company, through this service, attempts to provide the fullest possible protection for the owner of a Tile-Tex Asphalt Tile floor. This is one more compelling reason why architects continue to specify and insist upon the best in asphalt tile—Tile-Tex. Write today for your copy of "Maintenance Data."

THE TILE-TEX 1946 PLEDGE
1 Adequate Plant Facilities
2 Continuous Product Development
3 Uniform Product Quality
4 Controlled Installation Standards
5 Maintenance Service Program

THE TILE-TEX COMPANY, Inc.

Asphalt Tile Mfr. **Subsidiary of The Flintkote Company**

Chicago Heights, Illinois • 220 E. 42nd Street, New York City

LOOK TO Tile-Tex IN '46
FOR THE BEST IN FLOORING

ASPHALT TILE-TEX TILE

THIS MONTH

(Continued from page 18)

practiced in Palo Alto, California, since 1940—except for a wartime interruption to work as a structural engineer in the design of oil refineries. His first experience after graduation from the University of California, Berkeley, in 1935, was as a draftsman for Clarence A. Tantau, San Francisco, whose practice included large residences and some buildings of the 1939 Fair. He later worked with Leslie I. Nichols in Palo Alto. His office practice is varied, commercial and industrial projects developing along with residential work.

Believing that a good portion of the housing market represents a demand for modern homes with modern materials and construction, **Donald Durell**, Architect, Brattleboro, Vermont, turned his attention to prefabrication following architectural and planning research into wartime mass production methods. He believes that comparatively few prefabricators will produce really modern houses. He therefore devoted a year to development of a construction technique, twelve basic house plans, and the details of production, financing, and fabricating facilities. Production is now getting under way at his Solar Homes Company.

After some years of random drafting and mechanical experience, **Van Evera Bailey**, A.I.A., was started on the road

DONALD DURELL

VAN EVERA BAILEY

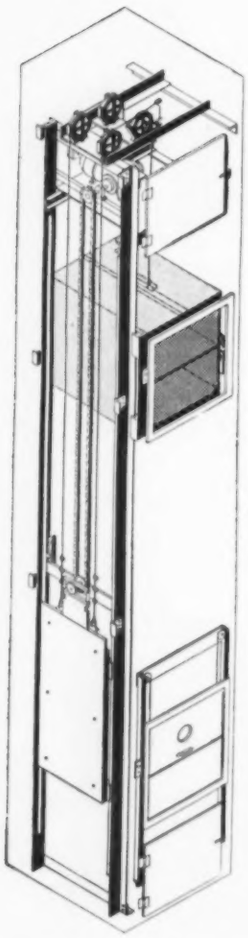
to architecture by the friendly interest of William Gray Purcell, of the firm of Purcell & Elmslie, Chicago. He explains that Purcell "is a great experimenter and together we have tried many things in the building line." While this Portland, Oregon, lad was working in the architectural offices of Purcell's friends, he studied engineering and other subjects in his spare time. He became an architect early in the depression but took field jobs and applied in actual construction some of his hard-won experience. He wandered around the world and continued his informal education until he returned to Portland in 1936 to open his office.

Paul Weidlinger, Consulting Engineer, knows about "cooperation between architect and engineer" because he has practiced as both. His wide experience in both professions started when he left his native Budapest to study architecture in Czechoslovakia and later in Switzerland. Although he was interested even then in structural engineering, he finished his architectural training and traveled through Europe, working in Zurich, in London, with Moholy-Nagy, and later with Le Corbusier. His last venture into archi-

(Continued on page 22)

ROTO-WAITER
by Sedgwick

A new kind of fully automatic electric dumb waiter that never overtravels



The endless chain drive of the new Sedgwick Roto-Waiter makes it the perfect dumb waiter for stores, hospitals, hotels, restaurants, libraries, clubs, schools, banks, factories, residences, etc.—especially for two-stop installations.

The single direction motor helps cut costs by eliminating the need for special control equipment normally required when reversing motors are used—and, by reducing starting torque, it cuts current consumption.

And Sedgwick Roto-Waiters. . . .

1. **Never overtravel**
2. **Are completely factory-assembled-and-tested**
3. **Require only minimum clearances**
4. **Have an overload safety device for safe operation**
5. **Require no heavy load-bearing supports except at the bottom**
6. **Are easy to install**

The table of dimensions shown below lists three standard *counterweighted* Roto-Waiters. In addition, Sedgwick makes an uncounterweighted Roto-Waiter—capacity 150 lbs., car size 24" x 24" x 36"—which is ideal when a dumb waiter is to be installed in limited space as for undercounter use.

STANDARD ROTO-WAITER DIMENSIONS

Size No.	2C	3C	5C
Capacity, lbs.	200	300	500
Car width, in.	24"	30"	36"
Car depth, in.	24"	30"	36"
Hoistway width, in.	33"	39"	45"
Hoistway depth, clear in.	27"	33"	39"
Hoistway depth, including doors, in.	29"	35"	41"

So if you are stymied by perplexing lifting and lowering problems involving the vertical movement of material and merchandise—*tell us about them.* And write for complete details and specifications of the new electric dumb waiter that *cannot overtravel*—the Sedgwick Roto-Waiter.

SEDGWICK MACHINE WORKS, 142 W. 15th St., New York 11, N. Y.

ELECTRIC AND HAND POWER ELEVATORS AND DUMB WAITERS

Ruberoid Makes Every Type

• No matter what type of roofing the job calls for—Ruberoid makes it—with complete specifications to meet any condition. Whether smooth surfaced Asbestos; or Coal Tar Pitch and Felt with gravel or slag surfacing; or Asphalt, smooth or gravel and slag surfaced—*they're all available from Ruberoid!*

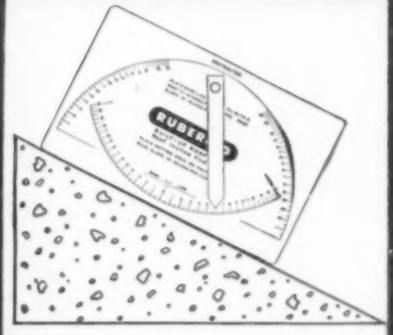
That's why specifying Ruberoid simplifies any roofing problem. Since Ruberoid approved roofers are not prejudiced in favor of any one type of material, they give you unbiased help—help that's solidly based on years of experience. You get all your roofing from one source, assuring centralized responsibility, smoother operation and uniform quality!

When desired, Ruberoid Built-up Roofs are bonded for 10, 15 or 20 years, depending upon specification used.

RUBEROID

BUILT-UP ROOFING

The RUBEROID Co., Executive Offices: 500 Fifth Ave., N. Y. 18, N. Y.
Asphalt and Asbestos Building Materials. Thermal Insulations.



HANDY ROOF INCLINE FINDER

For Your Superintendent

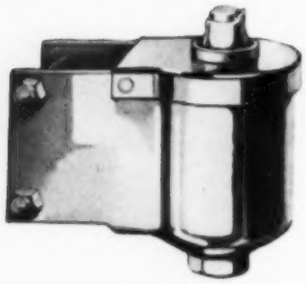
This useful pendulum device instantly gives the roof incline in inches per foot. Helps determine proper type of roof. Made of transparent plastic, it can also be used as a protractor.

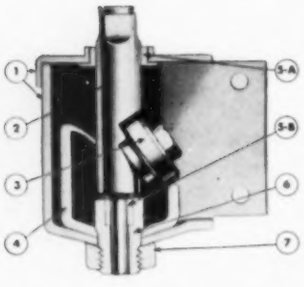
FREE ON REQUEST!

ON WEISART FLUSH COMPARTMENTS

WEIS UNIVERSAL HINGES

ELIMINATE SIDE THRUST AND WEAR





Doors of Weisart flush compartments swing dependably—year in, year out—on Weis Universal Gravity hinges. Examine the photographs at the left and you'll see the principle of construction which removes the cause of trouble, insuring lasting satisfactory service.

The ball bearing roller is so mounted on the pintle that in operation geometrical continuity of contact is maintained between the roller and its race; thus side thrusts and wear are eliminated. Ball bearing roller and race are of case hardened steel. These, with the pintle, are cadmium plated. All interior working parts are available in stainless steel, optional, at an extra charge.

Developed by Weis, this hinge is standard equipment on Weisart—the flush compartments which meet the highest standards of structural quality, sanitation and fine modern appearance. Write for details and specifications, without obligation.

1. Case
2. Pintle
3. Ball bearing roller assembly
4. Race or Cam
5a.-5b. Bronze oil-impregnated roller bushing
6. Adjusting connector
7. Adjusting nut

HENRY WEIS MANUFACTURING CO., INC.
621 WEISART BUILDING, ELKHART, INDIANA

THIS MONTH

(Continued from page 20)

PAUL WEIDLINGER

tecture was as winner of a competition for the design of a new building for the university in La Paz, Bolivia—which has not been built. He became chief engineer for the Bolivian Department of Agriculture, and designed the Pilcomayo Dam and water control system now under construction to irrigate 300,000 acres of land—which he proudly describes as "my most useful and positive accomplishment." Coming to New York, Weidlinger worked as structural engineer for Fellheimer & Wagner, designing some TVA structures, then went to Atlas Aircraft Products Corp. where he has had charge of the development of Mobilar Structures (Mar. 1946. PROGRESSIVE ARCHITECTURE).

The author of "Corrosion and Water Piping Selection" is **Henry L. Shuldener**, President and Technical Director, Water Service Laboratories, Inc., which he founded in 1927. Shuldener graduated as a chemical engineer in 1920 from the School of Engineering, New York University. He has written a number of papers on water treatment and corrosion, and also is the inventor of the Chemistat, an automatic water treatment device.

HENRY L. SHULDENER

Q · FLOORS *because..*

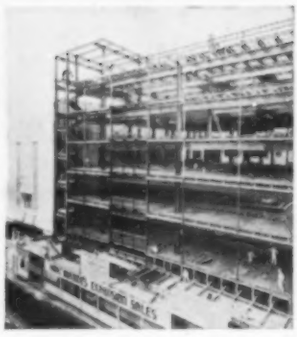
Q-Floors gave E. L. Robertson, Miami and John R. Weber, New York, architects,
freedom from all floor plan headaches.

You have no worry about change of floor plans, even in a building where frequent change is essential to the business, if you are working with Q-Floors.

Burdine's department store, for example, rolled back the rug display one night, tapped the Q-Floors for electrical outlets and set up the demonstration of sewing machines, pictured on the right, with each machine having an outlet.

An outlet takes literally only a few minutes to install on Q-Floors. A Q-Floor is steel cells crossed over by raceways in such a manner that any six inch area can be tapped for power. An electrician merely drills through a thin concrete fill. No trenches with their mess and muss. Think what this means in terms of flexible floor layout.

Over-all electrical availability protects any building you design from electrical obsolescence no matter what the future hatches out of electronics. From a purely professional point of view, you can save yourself a whale of a lot of grief by specifying Q-Floors. Your client can locate partitions and electrical fixtures *after* he moves in.



And for Rodney Miller, Miami contractor, *Q-Floors formed a dry, clean, noncombustible platform for all trades*

Faster construction with Q-Floors is easily translated into money saved by your client. Q-Floors reach the job cut to fit. Two men can lay 32 sq. ft. in 30 seconds. The floors go in as fast as frame goes up. No forms or shoring; no wet materials cause delay. This speeds all other trades along so that construction time is reduced 20 to 30%. Robertson has proved this on thousands of installations.

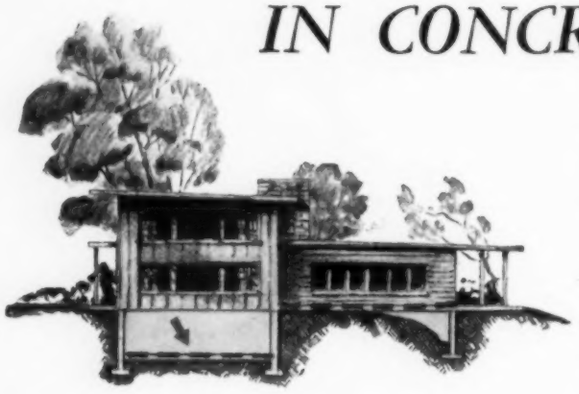
Q-Floors construction advantages and the *over-the-years* electrical advantage would justify premium costs. But—costs are right in line. You don't have to hedge one bit for cost. For complete information call a Robertson representative or write to

H. H. ROBERTSON COMPANY 2405 Farmers Bank Building Pittsburgh 22, Pennsylvania Offices in 50 Principal Cities World-Wide Building Service

Q · FLOORS

FLOORING

THE "ALKALI PROBLEM" IN CONCRETE SUBFLOORS



The increased use of concrete subfloors in direct contact with the ground makes more important than ever complete understanding of moisture and alkali inherent in these subfloors, and their effects on resilient floors.

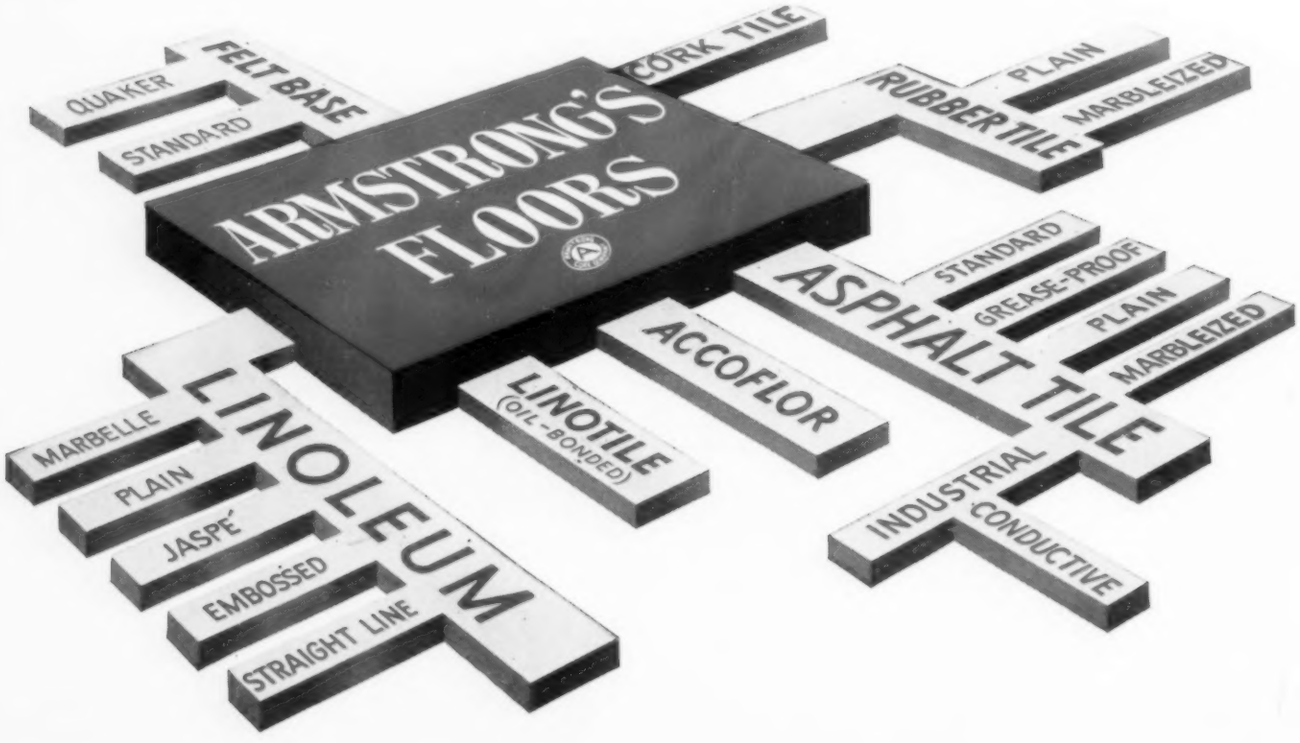
Well known to many architects and builders as the "alkali problem," this condition is primarily a problem of moisture. Alkali is present in every concrete slab but is not detrimental to resilient flooring materials without moisture. On adequately ventilated suspended concrete subfloors, moisture is not present in troublesome quantities. On these floors linoleum, Linotile* (Oil-Bonded), rubber tile, cork tile, or similar flooring materials may be specified.

Where the slab is in direct contact with the ground or a poorly ventilated air space (Fig. 1), moisture is brought up through the slab by capillary action. It dissolves the alkaline salts in the concrete and appears at the surface as a destructive alkaline solution.

Asphalt tile is the one widely acceptable resilient floor which will withstand the harmful combination of alkali and moisture. This characteristic, together with its colorful design possibilities and its wearing ability, has made asphalt tile an excellent flooring material for all types of floors whether suspended or directly on the ground.

While various factors may prevent the use of most flooring materials on concrete subfloors that are subject to ground moisture, the most serious difficulty caused by alkaline solutions is the chemical reaction, "saponification." This is essentially the same reaction that takes place when certain oils or fatty acids are mixed with alkali in the manufacture of soap.

Although moisture and alkali conditions may vary greatly, there are always sufficient moisture in the ground and alkali in concrete to present an "alkali problem" on subfloors affected by ground moisture. It is never safe to assume that a concrete slab will always be dry because it has been dry for several years. In many cases a concrete floor will seem to be dry because the moisture content is very small and



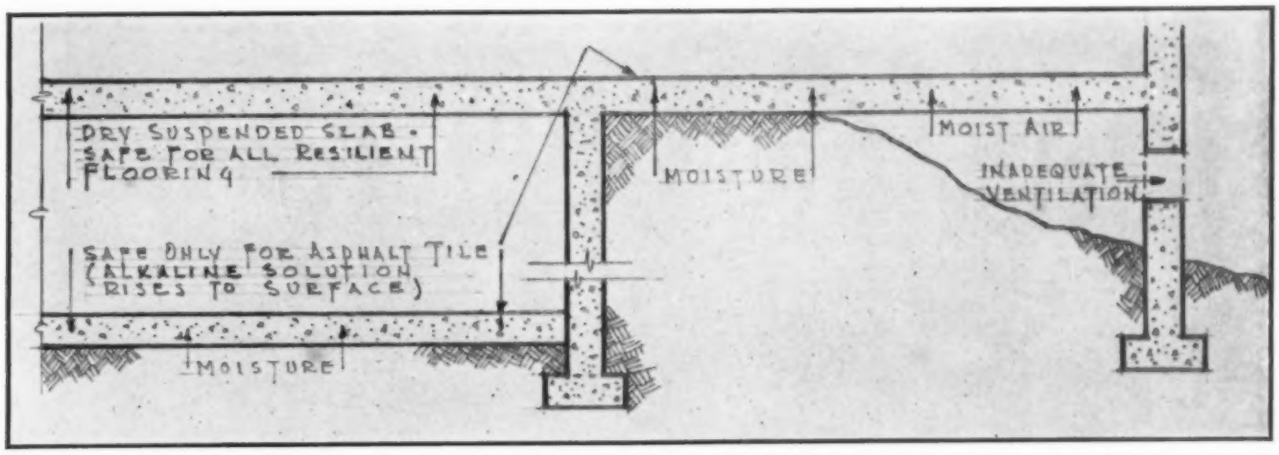

DRY SUSPENDED SLAB - SAFE FOR ALL RESILIENT FLOORING
SAFE ONLY FOR ASPHALT TILE (ALKALINE SOLUTION RISES TO SURFACE)
MOISTURE
MOISTURE
MOIST AIR
INADEQUATE VENTILATION

FIG. 1 This drawing shows how moisture from the ground or from an inadequately ventilated air space below penetrates the concrete slab, bringing alkali to the surface in solution. This solution attacks the oil binders of most resilient flooring materials, causing a chemical change. Linoleum and other resilient flooring materials may be used on dry suspended floors, but on floors which contain ground moisture, asphalt tile should be installed. Waterproofing of concrete is possible, but usually too expensive to be practical.

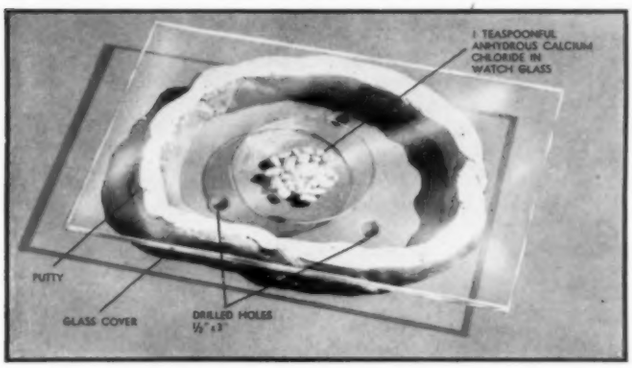


FIG. 2 This moisture test of newly poured suspended concrete floors of all types should always be made before installation of materials that are affected by alkaline solutions. If floor is too moist, calcium chloride will be partly dissolved in 24 hours.

FIG. 3 Immersion for 2 hours in a 5% solution of sodium hydroxide determines color permanency of pigments used in asphalt tile. Beaker at right shows the bleeding of colors from the tile resulting from pigments that are not alkali resistant.

evaporates into the air as soon as it reaches the surface. But when a flooring material is cemented to this surface, evaporation is prevented or retarded and the alkaline solution collects under the flooring material.

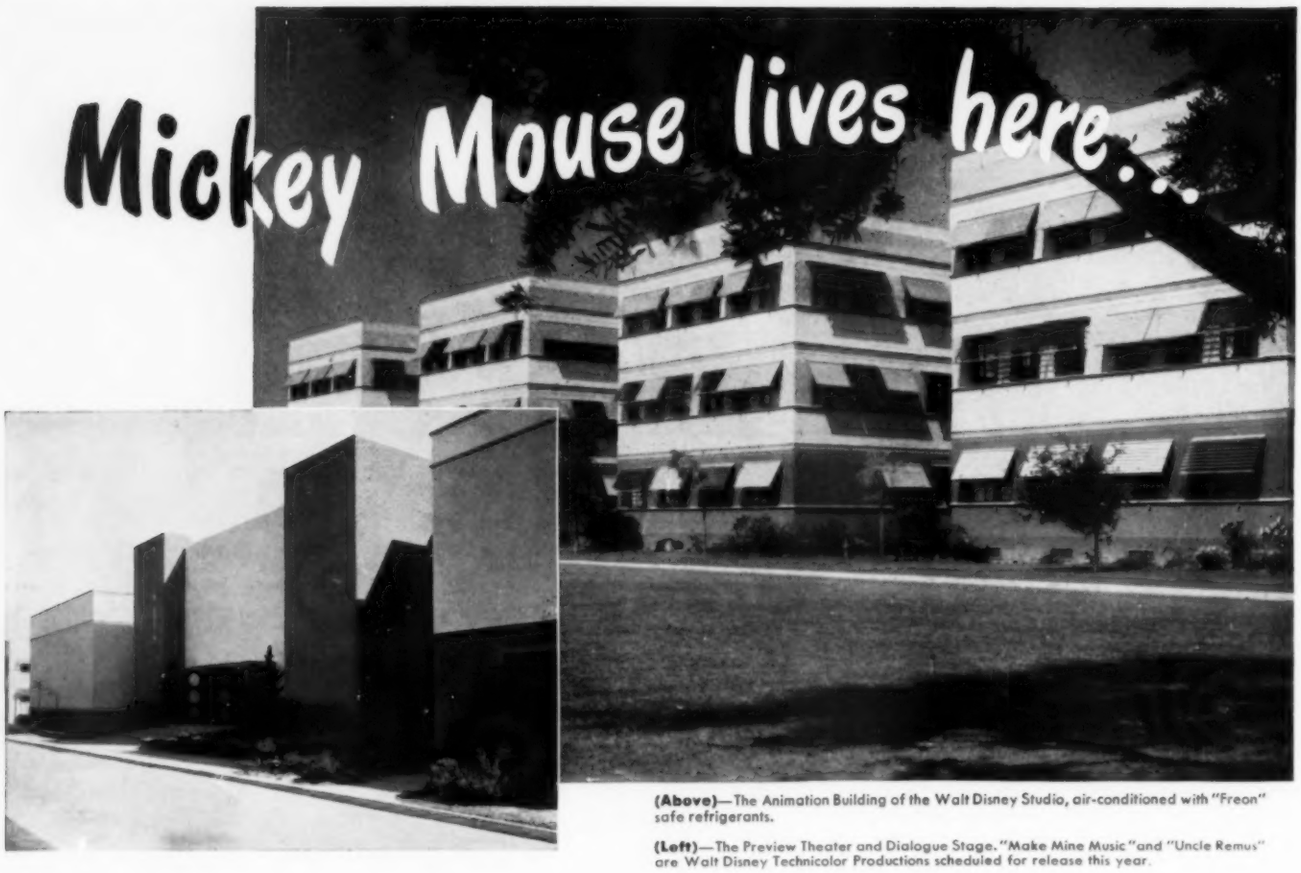
There have been many attempts to find ways to waterproof concrete slabs to make the use of other flooring materials possible. But thus far, the only method which works satisfactorily is nearly always too expensive to be practical. This is the membrane method which consists of three layers of saturated roofing felt, each thoroughly mopped in hot asphalt. The top layer is flooded with hot asphalt and covered with 1 or 2 inches of concrete topping. The saturated felt must be flashed up the walls at least 2″ above the finish floor level. In addition, one layer of felt must be applied in asphalt to the outside of the foundation wall to prevent seepage of moisture.

While alkali and moisture present difficulties everywhere, in a few small and scattered localities the problem can be so serious, due to freak circumstances, that even the use of asphalt tile is open to question. In these few areas there is such a great amount of alkali in the concrete that when it is combined with an excessive seepage of moisture, the solution rises through the joints of the tile and leaves alkaline salt deposits on the finish floor surface. While this seepage cannot usually be stopped except by the expensive membrane waterproofing method, it has no effect on the composition of asphalt tile and can be cleaned from its surface.

Another important consideration is the alkali resistance of color pigments used in asphalt tile. Armstrong's Research Laboratories have worked on this problem for years and, as a result, have found color pigments for Armstrong's Asphalt Tile that are alkali resistant. They prevent fading and "color bleeding" of the tile even under severe alkaline conditions. (See Fig. 3.)

Armstrong's Research Laboratories are constantly adding to a fund of knowledge gained by long experience and careful research. This knowledge makes possible sound recommendations to those who have flooring problems. For information on your particular problem, contact any of Armstrong's district offices or write directly to the Armstrong Cork Company, Resilient Tile Floors Department, 8906 Duke Street, Lancaster, Pennsylvania.

T. M. REG. U. S. PAT. OFF.



(Above)—The Animation Building of the Walt Disney Studio, air-conditioned with "Freon" safe refrigerants.

(Left)—The Preview Theater and Dialogue Stage. "Make Mine Music" and "Uncle Remus" are Walt Disney Technicolor Productions scheduled for release this year.

HOME OF WALT DISNEY PRODUCTIONS
safely cooled with "FREON-12"

IN DESIGNING the Walt Disney Studios in Burbank, California, architects were vitally concerned with the need for safety in controlling temperature and humidity throughout the various buildings.

In the building where animated pictures of the famous Disney characters are made, inflammable motion picture film is used. To reduce the fire hazard . . . it was good judgment and a logical choice to select air conditioning equipment designed to utilize non-flammable "Freon." "Freon" safe refrigerants are also non-toxic, non-explosive, odorless and stainless.

The air conditioning equipment, installed in 1940, consists of two banks each of six General Electric 8-cylinder V-type reciprocating compressors with a total of 600 h.p. Their operation is 100% automatic, governed by the temperature of a circulatory water loop which provides a positive control at all times of comfort-cooling and humidity.

Humidity Control Essential

Average temperature within the studio buildings is maintained between 72°F. and 75°F. In the Inking and Painting buildings, regulated humidity is essential to prevent paint from becoming tacky on the celluloids. Films must also be safely kept under controlled climatic conditions both before and after processing.

"Freon" safe refrigerants have become the first choice of prominent architects and engineers everywhere. They recognize the importance not only of the safety of these refrigerants, but also of their purity and almost complete absence of moisture . . . factors which contribute to the dependable operation and longer life of the equipment. Complete data for your files upon request.

Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington 98, Delaware.

KINETIC

FREON

REG. U. S. PAT. OFF.

safe refrigerants

"FREON" IS KINETIC'S REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLENTS.

PROGRESSIVE
ARCHITECTURE
PENCIL POINTS

MAKE THAT HOUSING GOOD!

The situation of the architect, here in mid-1946, is a paradoxical one—plenty of substantial work on the boards but comparatively little that can be built now. Yet there are signs that the frustrations to which creative spirits have become inured during these decades of depression and war will not last much longer. Another spring will surely see an adequate supply of materials and labor so that the paper plans and specifications of today will become lumber and steel and brick and stone realities.

While we wait, however, for the more ambitious projects to materialize, there is a pressing program of humbler nature but of vast scope and social importance to be accomplished. Homes must be provided for millions of ordinary American families—including veterans and non-veterans of average or below average incomes. These houses must be of all varieties, ranging from single, duplex, and row houses to large scale, low-rent apartments. Many will be prefabricated but more will be conventionally built. Hundreds of thousands of units will unfortunately be erected with little or no architectural guidance, either as to plan or supervision.

Yet the influence of good progressive design on this postwar housing will not be negligible. The public has learned a great deal from the better work that has been published during these past few years and it has a much better understanding than ever before of the possibilities for greater comfort, convenience, economy, and beauty that lie in good planning and the application of modern methods and materials to building. An increasing number of individual clients, intelligent developing builders and promoters of group housing will be smart enough to make direct use of the best architectural talent that is available. They will find it good business to do so.

There is great danger, of course, that with all the pressure for speed in construction and low cost for the finished results there will be a tendency to produce cheap and flimsy buildings to house the American people. Where quantity is the watchword, the merit of the product is likely to decline. It is the architect's place to exert every ounce of influence he possesses toward the maintenance of high quality in this housing—not only in the structure, materials, and craftsmanship, but in the design of both the individual units and the communities into which they are composed. This he can do directly and indirectly in a variety of ways. We hope he will assume the responsibility and thus prove himself truly a professional man.

It is to the architectural profession—within which we include all serious, able, and conscientious building designers of no matter what official title—that the public must look for improved rather than declining standards. No other group should care as much. No other group has the necessary combination of abilities. The present emergency will provide a revealing test of its claims for wider public approval and support.

Kenneth Reid

WILSON W. WYATT, National Housing Expediter Administrator, National Housing Agency

THE ARCHITECT AND THE HOUSING

The Veterans' Emergency Housing Program calls for the starting of 1,200,000 homes this year and 1,500,000 in 1947 to meet the critical shortage of homes which faces returning veterans and other citizens.

This rapid acceleration in home building makes it necessary to guard against unplanned, incompletely planned, or improperly planned projects. When builders throughout the country are asked to construct houses to the limits of their ability, there will be some who will propose building in the wrong places, or without sufficient attention being paid to such necessary community facilities as schools, hospitals, utilities, stores, transportation, and employment.

Obviously control over community planning cannot and should not be exerted from Washington or even from the office of the regional expediter. That is why we are urging Veterans' Emergency Housing Committees to work with planning groups in each community to get the best possible locations and site arrangements. Certainly, none of us wants the housing that is built in this emergency to become future slums.

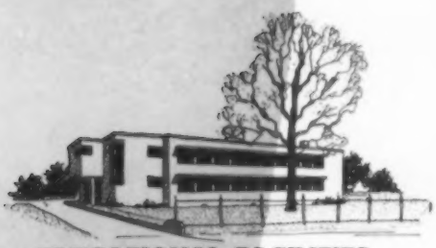
There is another important community committee—separate from the one mentioned above. That is the Civilian Production Administration Committee set up to help the local CPA representative determine what non-residential construction is essential and should be allowed to go forward. It is the responsibility of these committees to see that new housing is not starved for health, educational, and even shop-

PREFABRICATED HOUSES
Page 60

CUSTOM-BUILT HOUSES
Page 52

PLANNED COMMUNITIES
Page 62

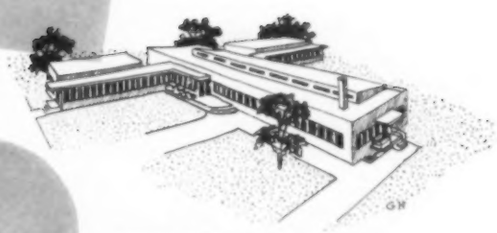
READY-BUILT HOUSES
Page 50



EDUCATIONAL FACILITIES
Page 70

RECREATIONAL FACILITIES
Page 72

CRISIS



HEALTH FACILITIES
Page 74

ping centers, which will be needed to service new residential developments.

The architects and city planners throughout the country thus have a definite responsibility and part in this program, not only as designers of individual homes, but as members of and advisers to both of these committees.

Architectural groups and individual architects should see to it that planners are represented on these committees so that they may make their voices heard throughout the country, on the side of *good housing* and *well planned housing*, as well as *enough housing*.

READY-BUILT HOUSES

Various schemes have been tried to compensate an architect for standard designs which can be varied. The compensation must be such that he can afford to give real thought to plan and construction and materials and the expression of these things in the design of the building. Perhaps the ideal arrangement would be a cost plus fixed fee payment to the architect. Failing this, an agreed upon fixed sum determined by an estimate of the architect's cost plus a reasonable amount for profit and overhead is a workable arrangement, and one which is being used in many cases. Either of these plans seems preferable to a percentage fee, which today may fluctuate and turn out to be arbitrary and unfair to one or the other party, and even better than a small payment for an original design with royalties for "repeats"—an arrangement which bears little relationship to the actual investment or cost on the architect's part.

Whatever financial arrangement is made, there should be an allowance for a certain amount of consultation during construction. The architect's part in the site layout, and the development of a planned community rather than an aggregation of houses, is another aspect which is important and must not be overlooked.

Meeting more discriminating buyers—families who have read about and studied the new trends in planning and are curious about new materials, modern equipment functionally arranged, and in many cases a contemporary appearance—the builder will increasingly rely on the design ability of architects who are modern-minded and trained in the new idiom. Changes and improvements in technics in the home building industry should bring closer together those two professions—those who design and those who build.

FRANK W. CORTRIGHT
Executive Vice-President,
National Association of Home
Builders of the United States

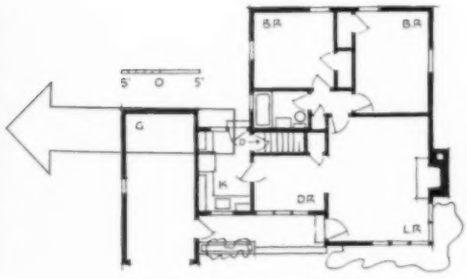
As an illustration of the agreeable type of home community that can result when an aggressive homebuilder commissions competent architects to lay out the pattern of the development as well as design the house types, "Wedgwood" is instructive. While the houses can hardly be classed among the most progressive residential work extant, the careful organization of the floor plans and the willingness to improve upon convention in design elements represent laudable advance in this conservative field of architecture. Twenty-four basic designs are used for the various two- and three-bedroom houses. It is of more than passing interest that this particular builder-architect team has successfully worked together for 10 years, with some 1,500 completed homes to their credit.

TYPICAL two- and three-bedroom houses.

Photos by K. S. Brown

"WEDGWOOD," SEATTLE, WASHINGTON

THOMAS, GRAINGER & THOMAS, Architects — ALBERT BALCH and MAURY SETZER, Developers and Builders



In general, the houses at "Wedgwood" are wider than they are deep and built on wide, shallow lots. Dining space is usually a continuation of the living room, providing an increased sense of space, and all houses have a fireplace, an attached garage, and a full basement; the whole development is carefully landscaped and includes land-respecting curved streets—elements which not only facilitate sales but produce a harmonious, integrated neighborhood pattern.

Use of standard lumber sizes, and repetition and variation of basic floor plans made for economical wholesale construction methods. As the development progressed, two bulldozers constantly cleared land for new houses, leveling a temporary road in back of each house for easy truck access. Large power saws occupied an on-site cutting shop for precutting framing lumber to length; a smaller power saw, in one of the under-construction houses, cut trim and finished lumber as needed.

CUSTOM-BUILT HOUSES

Many architects will find themselves, in the next few years, forced to consider small house design, despite doubts about the possibility of doing a progressive job and at the same time making a living.

We asked two architects active in this field to tell us of their difficulties and their rewards. Theodore C. Bernardi, of Wurster, Bernardi and Emmons, San Francisco, California, and Don Hershey, of Rochester, New York, agree on many points.

Hershey says the architect who would design houses successfully should "accept only those clients who are interested in doing a thorough and complete job with an open mind. Choose what you firmly believe and stick to it! Study materials, codes, and labor in your area; then design accordingly."

Bernardi points to William Wilson Wurster's success: "He devoted himself to his work, giving each client the benefit of his knowledge, imagination, and personal attention. This led to a recognition which brought a steady stream of jobs. He never 'went after a job.' Yet he kept a sizable office busy."

Hershey's business formula is simple and realistic: "Make certain your project is sound; charge at least 8% and hold to it; keep overhead low (efficiency is more essential than glamor); provide complete and compact plans, details, specifications; insist on supervision."

On the quality of clients' taste, both architects are encouraging. Says Bernardi, "The house-hungry people wait in line for plans from the architect and for lumber from the yard, and they are beset by high and uncertain building costs. It would be little wonder if they were satisfied with whatever is offered regardless of quality. But it is not so. More than ever they want good plans, carefully thought out amenities, outdoor living, the exhilaration of glass."

And Hershey reports from upstate New York, "I have found that by steady, constant strokes the public has gradually come to contemporary thinking."

Don Hershey (along with many others) is content to stay in the field of individual residence design. "Here is a real challenge to the architect and to the profession. Don't let them tell you that it's impossible to make a good living out of residential work. It can be done if you calculate carefully and set your office up accordingly."

Theodore Bernardi agrees, in essence, but thinks, if good architecture is to reach the very small house, that "the architect with imagination must, in turn, capture the imagination of developers and prefabricators so that they will consider his services a prime requirement."

Our correspondents appear to agree that it is possible and it is rewarding, although it requires careful maneuvering, to engage in a small individual house practice, and that anyone so engaged should look ahead and find ways to participate in the speculative and the prefabricated house fields.

Photos by Roger Sturtevant

The architect-commentators quoted at left come from California and New York. So do the two projects we have selected to illustrate progress in the individually designed small house. Both are two-bedroom houses, and both are specifically designed to meet particular family needs. In neither of them was there any effort to force a family within a preconceived design idea. That they also employ certain materials and equipment made possible by today's technological advance further places them in the progressive category.

THE REAR of the house faces south.

HOUSE IN ATHERTON, CALIFORNIA

WILLIAM F. HEMPEL, Architect

Designed for a young couple in a community near the campus of Leland Stanford, Jr., University and within easy commuting distance of San Francisco, this big-windowed house is built on a level site among the superb trees of an old estate that is now being subdivided. A study of the floor plan on the following page shows how by skillful organization of space the architect has achieved far more livability and amenity than are usually found in a house of this size. The large photograph above illustrates one of the most successful plan elements—the projection of the living room on the lawn side of the house, automatically producing two separated living terraces—the one on the right (opening off the dining room and kitchen) which is used for outdoor dining; the one at left (reached from the living room) provided for informal lounging.

ENTRANCE COURT: Garage at left. Exterior walls: combed redwood siding. Cedar shingles on the roof.

HOUSE IN ATHERTON, CALIFORNIA

WILLIAM F. HEMPEL, Architect

The owners had the usual requirements, the architect says, "of wanting more house and finish than the pocketbook would allow." So, after determining their most important "musts," he persuaded them to leave on a month's vacation, only to present them on their return with the plan essentially as it was built.

The compact arrangement provides surprising flexibility. The bedroom wing is reached directly from the entry; the study, with adjoining small bath, may be variously used—as a study with a back-door bath for cleaning up after gardening; as a maid's room; as a guest suite, or as a rental unit. The outdoor living rooms formed by the projecting living room have already been noted. The relation between the living room and the front door creates an illusion of almost endless space; for, from the door, the eye travels through the entry, across the diagonal of the living room, and on through the great corner windows out to the terrace, lawn, and trees beyond.

FRONT DOOR: Room placement provides a vista through the entire house.

LIVING ROOM: Mahogany veneer on the fireplace wall; pale blue paint on the others and on the ceiling; draperies, hand-blocked with a ginger-color pattern.

THE LIVING TERRACE.

HOUSE IN ATHERTON, CALIFORNIA

WILLIAM F. HEMPEL, Architect

Originally, the plan called for trellises above the two terraces; but the budget required a choice between these and the floor-to-ceiling glazing on the southern front. The latter was chosen, with the thought in mind that trellises might be added later.

The photographs on these two pages illustrate the outdoor living rooms at the back of the house. From the living room, doors open to the smaller terrace in the southwest corner where midday sun is ever present; the southeast terrace, the larger of the two, has access from the dining room, receives afternoon shade, and ample space for outdoor eating facilities.

LIVING ROOM CORNER WINDOW adjoining terrace.

THE DINING TERRACE.

VIEW THROUGH DINING ROOM toward terrace.

Photos by Gottscho-Schleisner

HOUSE IN DUTCHESS COUNTY, NEW YORK

DANIEL SCHWARTZMAN, Architect

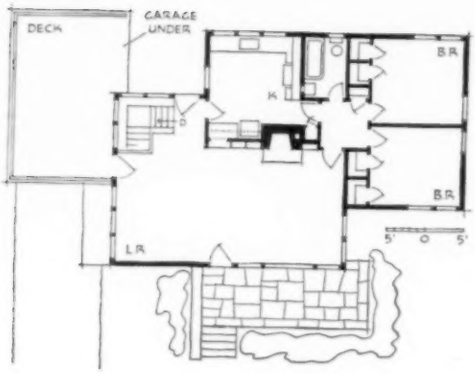
Completed just before the war, this house was designed for a professional man, his wife, and two sons. It was built initially for weekend and vacation use; eventually it is to be their year-round home. A magnificent view to the southeast and a pleasant outlook toward a hillside orchard and brook toward the west determined the orientation. Extensive excavation was impossible because of a natural rock outcropping; hence, the split level plan. Beneath the main living-room area are an above-grade playroom, with windows on the south and west, an interior boiler room, and a large storage closet off the entrance hall. Upstairs are the large living room, kitchen, bedrooms, and outside living deck, over the garage.

Much of the construction work was done by a farmer-part-time-carpenter and a farmer-part-time-mason. Approximate total cost was $5,000.

A VAST VIEW to the southeast set the orientation.

The foundations are local stone; exterior walls are finished with V-joint pine siding and horizontal cedar siding; asphalt shingles are used for roofing.

FIREPLACE CORNER; walls and ceiling, knotty pine; floor, oak.



THE BAND OF WINDOWS at the corner frames the distant view.

THE SPACIOUS, many-windowed kitchen.

PREFABRICATED HOUSES

Application of modern production techniques is creating for the first time in history a large-scale demand for architectural services in the field of low-cost housing.

Good design, which creates eye appeal, is an essential characteristic of these mass-produced homes. The need for good design has been recognized by manufacturers of toasters, automobiles, cosmetic packages, and hundreds of other items, who have employed the country's best industrial designers. If important in these products, it is a thousand times more important in a man's castle.

Good planning, from the standpoint of the efficient and economical use of space, is the second essential, because low-cost housing must provide the most home for the least money.

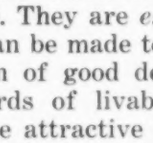
Livability, that less clearly defined attribute of a good home—that forethought that makes for convenience, easy arrangement of furnishings, and efficient housekeeping—is the third cardinal requirement, all three of which must be supplied by the architect.

Chief among the possibilities for reducing housing costs is reduction of the materials used. This calls for the most intelligent use of existing materials and the proper application of new materials.

No matter how nearly perfect the individual unit—the harmonious community requires good lot arrangement, pleasing variation of colors and textures, and proper placement of homes. These too reflect further opportunities that are unfolding to architects in this promising field of home prefabrication.

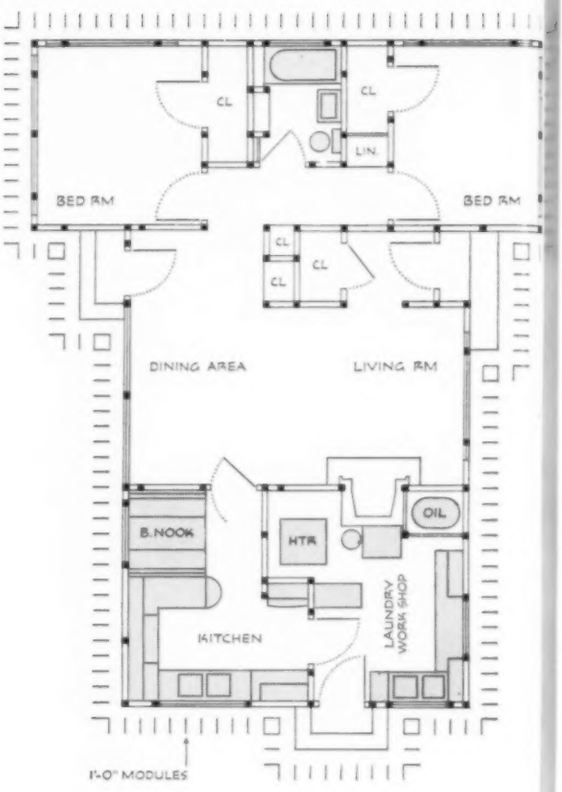
They are *new* opportunities because seldom, if ever, are the benefits of architectural service extended to homes under $7500. They are *expanding* opportunities because they can be made to awaken a new and keener appreciation of good design, efficient planning, high standards of livability, better use of materials, and more attractive community development which will find expression when these new property owners can afford to buy larger homes.

HARRY H. STEIDLE
Manager, Prefabricated Home
Manufacturer's Institute



Two points in Mr. Steidle's statement are illustrated by the house construction here presented. Through intelligent use of a simple prefabrication system, the small home purchaser (in a region not always known to be progressive) will gain the benefits of good materials used to full advantage. In addition, the satisfactory plan expression and such things as the "solar window" with the overhang of eaves carefully studied will, through prefabrication, bring progressive architectural design to a consumer group which could not otherwise afford it.

. . .



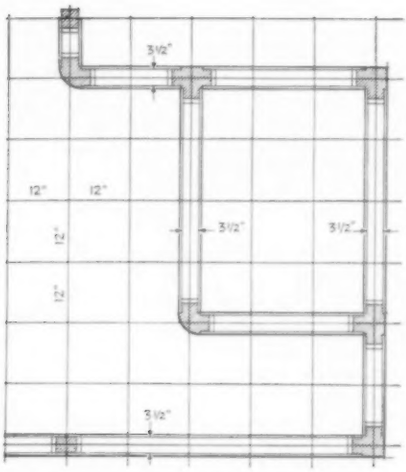
Typical Plan

COMPLETE, CONTEMPORARY, AND PREFABRICATED

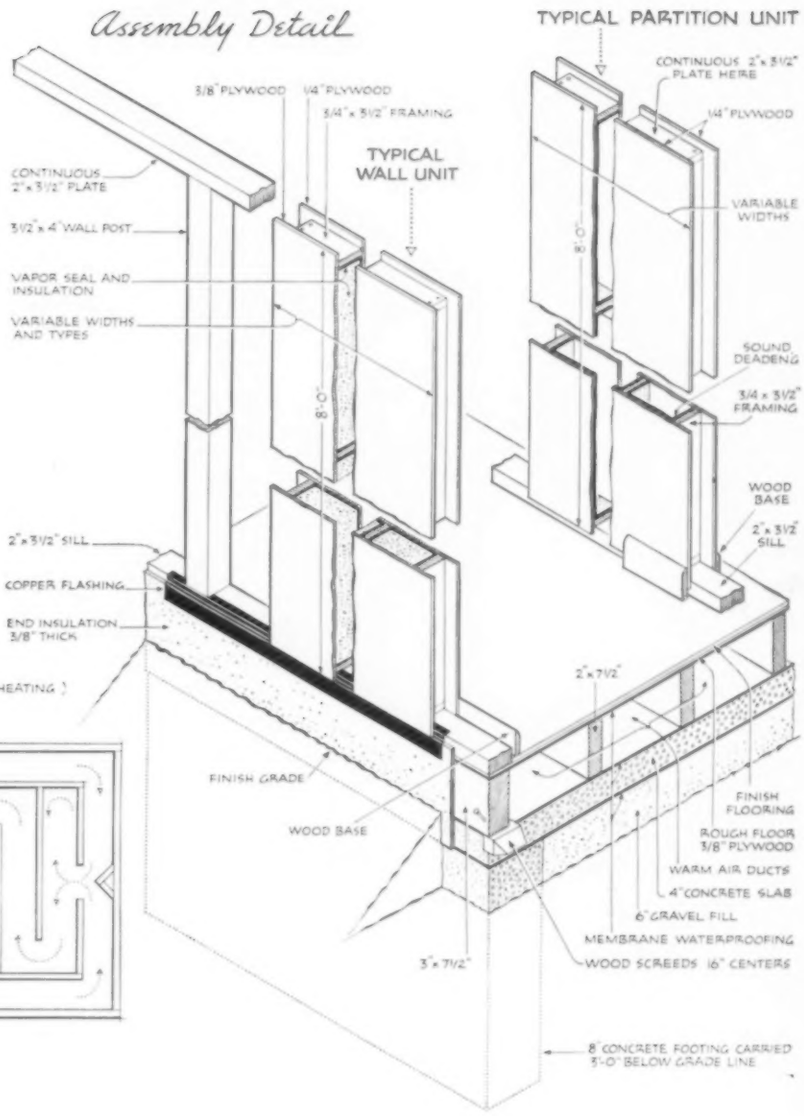
This summer, in conservative Brattleboro, the Solar Homes Company expects to start selling complete houses, fully equipped. The houses will embrace most of the contemporary developments of design, construction, and equipment that are immediately feasible.

The prefabrication system, adapted from a Forest Products Laboratories development, is a post-and-stressed-skin-panel type. Panel-and-post systems do require wood, but in a locality like Brattleboro there are inevitably local sources of supply, local prejudices in favor of wood, and such factors as transportation costs to consider.

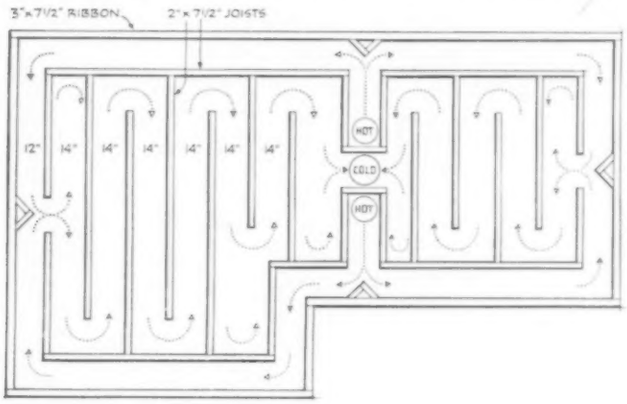
The company is organized for true mass production, with assembly-line



Module Diagram



Joist Layout (SCHEMATIC FOR RADIANT WARM AIR HEATING)



SOLAR HOMES CO., Brattleboro, Vt. DONALD DURELL and ASSOC., Designers and Builders

production techniques. It will not only design and produce building units and houses, but will also perform the function of operative builder, so that the buyer will find himself involved with one seller only, with a single fee to pay, and with one set of contract documents. Yet for all this business-like approach, Mr. Durell emphasizes that: "*We are never for a minute losing sight of good design, finesse, or the amenities which good architecture and good expression can produce.*"

The houses are laid out on a 12" grid, a module small enough for flexibility and freedom in design, yet large enough to permit reasonable standardization. The design approach is contemporary, and recognizes local tastes and conditions. Thus the houses are oriented to take advantage of sun heat and light, with eaves overhangs to eliminate objectionable summer sun but admit winter sunlight; yet the glazed areas, though larger than ordinary Vermont windows, are smaller than "solar" windows in more temperate climates. Glazing is all fixed, double plate glass; ventilation is obtained through controllable louver panels.

Heating is a radiant floor-panel system, using warm air circulated through the joist spaces. Direct warm air circulation can also be provided by inserting floor registers; fireplaces are to be of the heat-circulating type. Much of the lighting is to be built-in fluorescent; doors are to be flush, eliminating dust-catchers; finish of the plywood surfaces is to be one of the newly developed synthetics, factory-applied and well rubbed.

There are to be a dozen or so standard plans, all subject to variation in layout and exterior and interior treatment, and designed to permit expansion. Eventually the Company will have a full professional staff, ranging from architects and landscape architects to interior decorators and plumbers; and it will be prepared to provide houses complete to the last drapery, or unfinished, to be finished by the purchaser at his leisure, or finished to some degree between these extremes, at prices ranging from $5,000 to $16,000.

PLANNED COMMUNITIES

In the present emergency it is of the utmost importance not to lose sight of the eventual value of developments as neighborhoods. The Local CPA Committees in charge of the approval of developments for priorities have a responsibility to their towns not to approve subdivisions which are lacking in proper neighborhood design: provision for shopping, recreation, accessibility to schools. Naturally, the need for these things will vary with the size and location of the development, but they should be given due consideration by the reviewing boards.

The major need of any neighborhood is play space for small children and adolescents. No subdivision should be approved that does not set aside at least one fairly central open area large enough for playing softball and other activities. In addition, it is highly desirable to provide small areas for the little kids in as many blocks as possible.

In large developments, especially if they are more than a mile from reasonable existing facilities, shopping should be provided. Food, drug, and general stores are the first—and often only—requirements. Ample parking space must be allowed, with room for expansion. Commercial structures of this kind are often a source of profit to the developer.

These two requirements, and the proper relation of the dwellings to schools, are something that all local committees should look into carefully. Upon them, to a large degree, depends the eventual stability of the neighborhood. Where the subdivision-plat regulations of a city or county fail to require reasonable community facilities, the committee itself should insist on their being provided *by the subdivider,* as a condition precedent to approval.

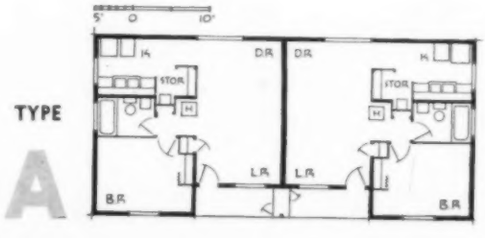
As a matter of fact, the intelligent subdivider and large-scale builder full well realizes the desirability of neighborhood planning. It makes his land and buildings sell faster, it sets up values that will help him get rid of the last parcels. The soundly planned neighborhood development is the one that will ride out the crash that is going to follow the present insanity and continue to pay taxes; so the mortgage holders too have a vital stake in the quality of the development.

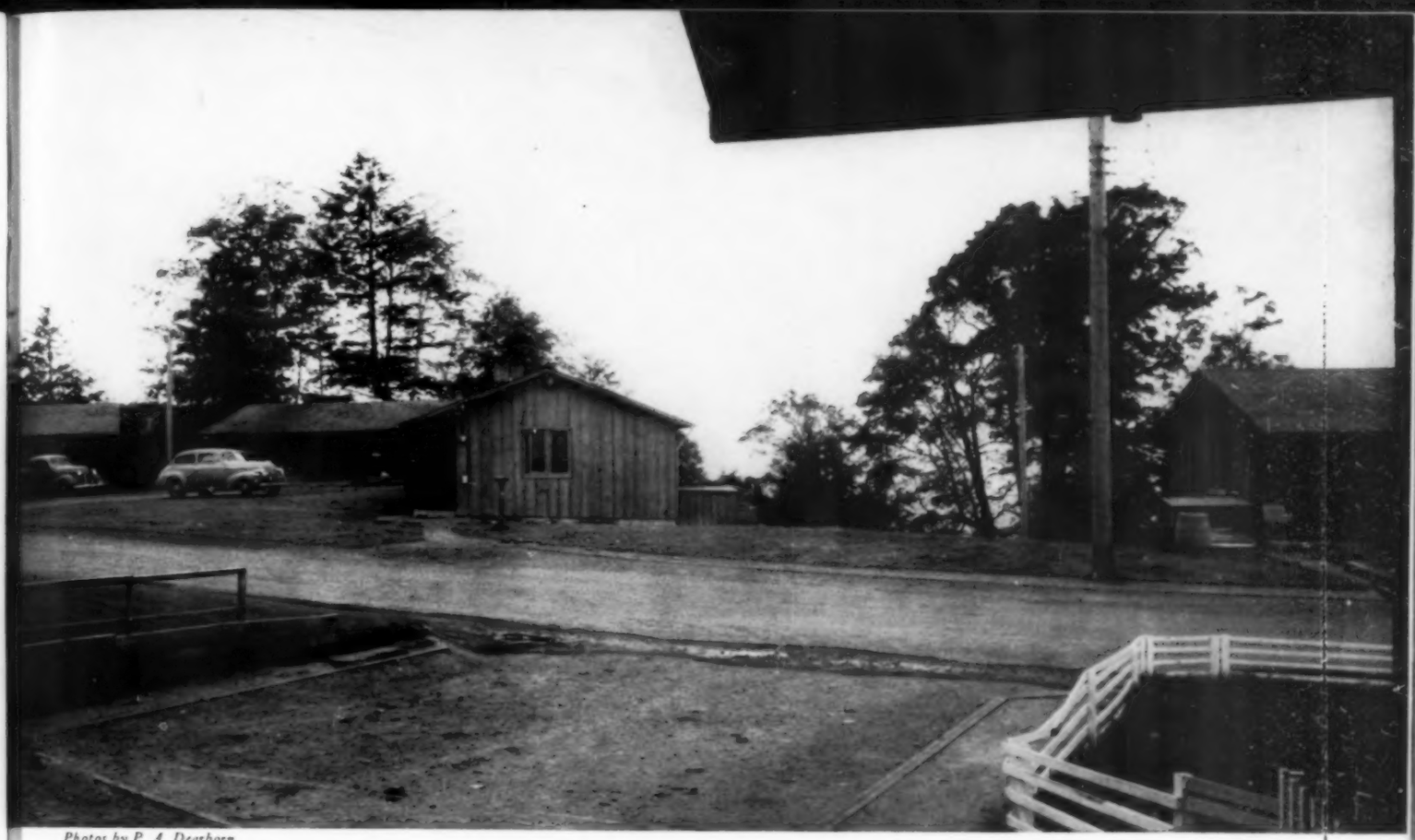
There are, of course, many other things which should at least be considered in appraising neighborhood quality. The eventual capacity of schools to care for the total child population within a half-mile radius of the school; the capacity of water and sewage lines; major recreation facilities for the whole future area; the provision of health centers, community buildings, libraries, and many other things—these factors may determine the fiscal future of the community.

What we build now, in haste, will last a long time. We cannot afford to build less wisely for the needs of people now than we did as a "temporary" measure during the war.

HENRY S. CHURCHILL, A.I.A., A.I.P.,
Author of *The City Is The People*

To illustrate certain of the advantages of community planning which Mr. Churchill enumerates, we have selected two projects that are widely separated in both purpose and time—one, a Naval housing development hacked out of the wild that was begun early in the war as a permanent community and later was subjected to the unavoidable restrictions and economies imposed by full-war exigencies; the other, a long-range plan, still in project form, that has been developed for the healthy growth of an existing but unplanned suburban community.

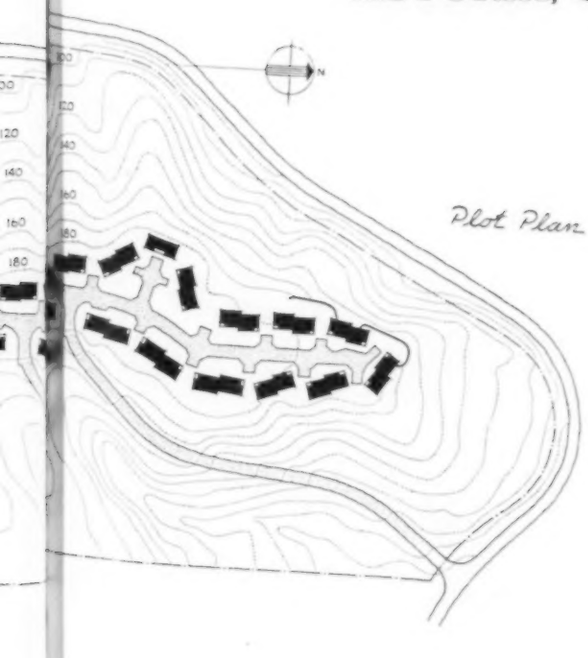




Photos by P. A. Dearborn

FPHA PROJECT TO SERVE A NAVAL AIR STATION, ASTORIA, OREGON

VAN EVERA BAILEY, Architect



Initiated as a 100-unit PBA project, this community was redesigned (in collaboration with the office of F. J. McCarthy, San Francisco architect) after all housing was transferred to FPHA, though the units were designed before the "standards for minimum housing" were set up. Shown is the half (50 units) of the project built first. The rugged site proved considerably at variance with the survey, and the architect says, "Much of my time was taken up in site grading and re-establishing grades to fit actual conditions." The buildings contain 6 one-bedroom, 34 two-bedroom, and 10 three-bedroom units, arranged in duplex plans. Offset of adjacent units was variously employed to reconcile building placement with grade conditions and bring the floor lines close to grade. Off-street parking bays and allocation of space for a community center (though not built) are noteworthy elements of the over-all plan.

TYPE B

TYPE C

OUTSIDE FINISH: Stained rough boards and battens. Every dwelling unit has its off-street parking bay.

The offset, stepdown pattern of units follows the contour lines.

ENTRANCE to one of the two-bedroom units.

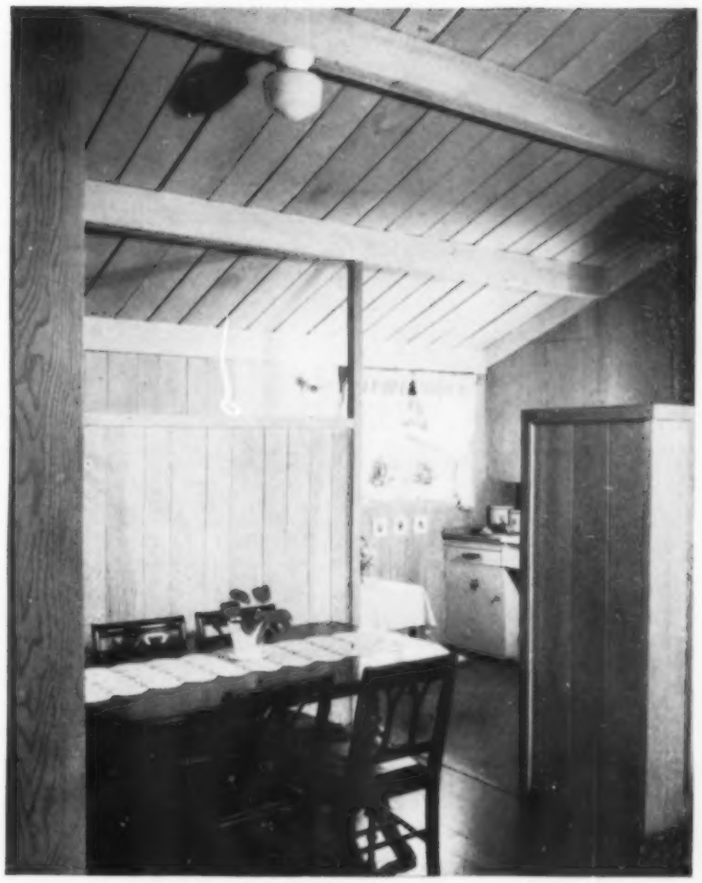
FPHA HOUSING PROJECT
ASTORIA, OREGON

VAN EVERA BAILEY, Architect

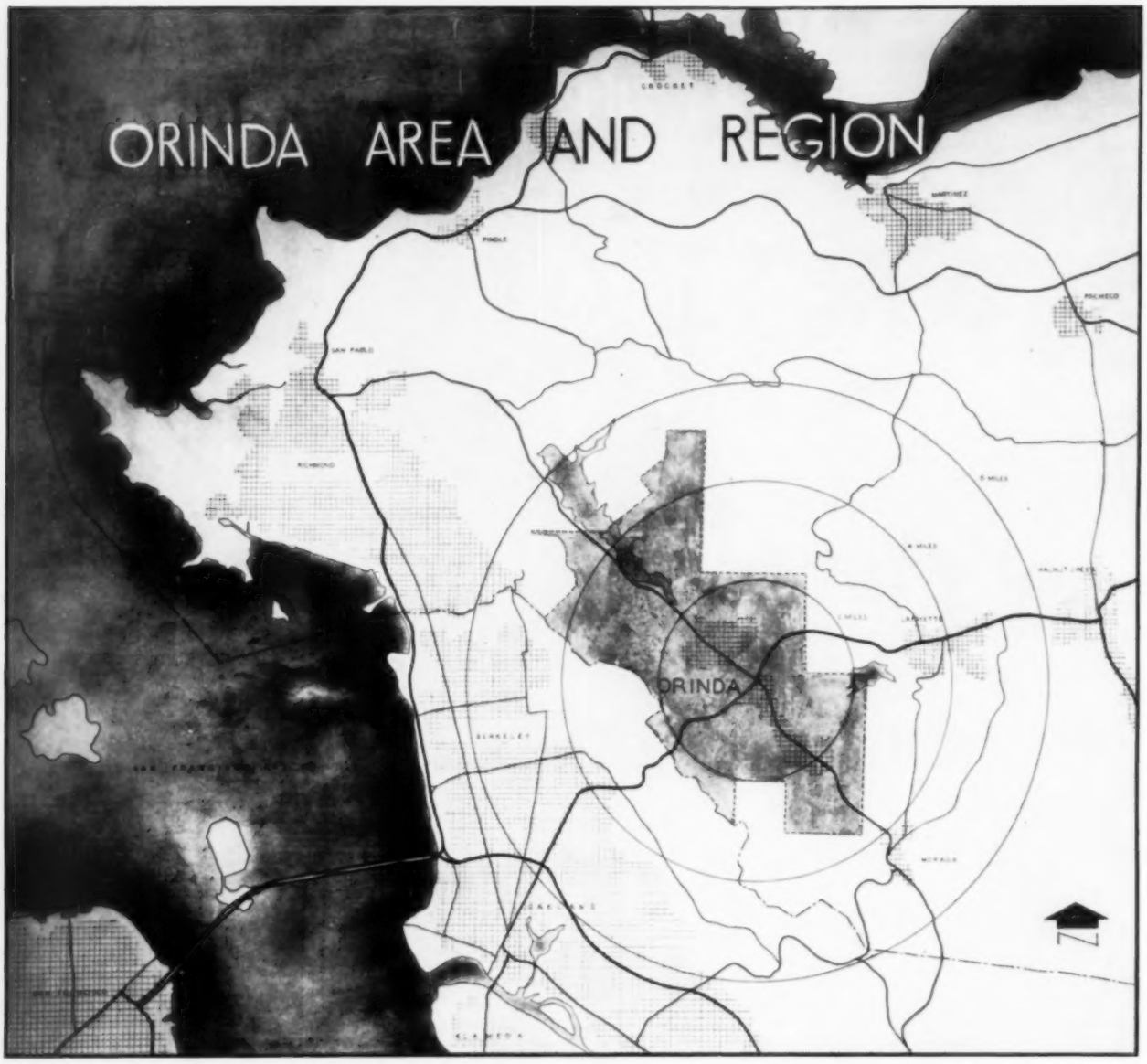
Since FPHA standards had not been worked up in full at the time this project was built, Mr. Bailey points out, "There was much latitude to design as we saw fit . . . The market was glutted with lumber (bless the days!)." Floor construction consisted of 2-inch T&G flooring spanning beams about 4 feet apart. Similar construction was used for the ceiling, left exposed. Only the outside walls are of double construction, interior partitions being single-board T&G for economy. Purlin roof construction did away with the necessity of ties across from plate to plate. Interior storage space instead of a vestibule type —later becoming standard with FPHA —adds to the spaciousness of the interior. Casement windows were used; millwork is "narrow" in appearance and simple in detail.

Typical "two-bedroom" living room. Corner of storage unit at left.

INTERIOR PASSAGE in a three-bedroom unit. In addition to considerable closet space and a large storage space off the kitchen, overhead access door makes use of under-roof space.



"Three-bedroom" dining space, looking toward kitchen.



Located in a valley just over the hills from the cities of Berkeley, Oakland, and (across the Bay) San Francisco, Orinda is assured continued growth. "With proper foresight and planning," the study emphasizes, "the people of Orinda can make it an ideal suburban community."

PLAN FOR FUTURE DEVELOPMENT OF ORINDA, CALIF.

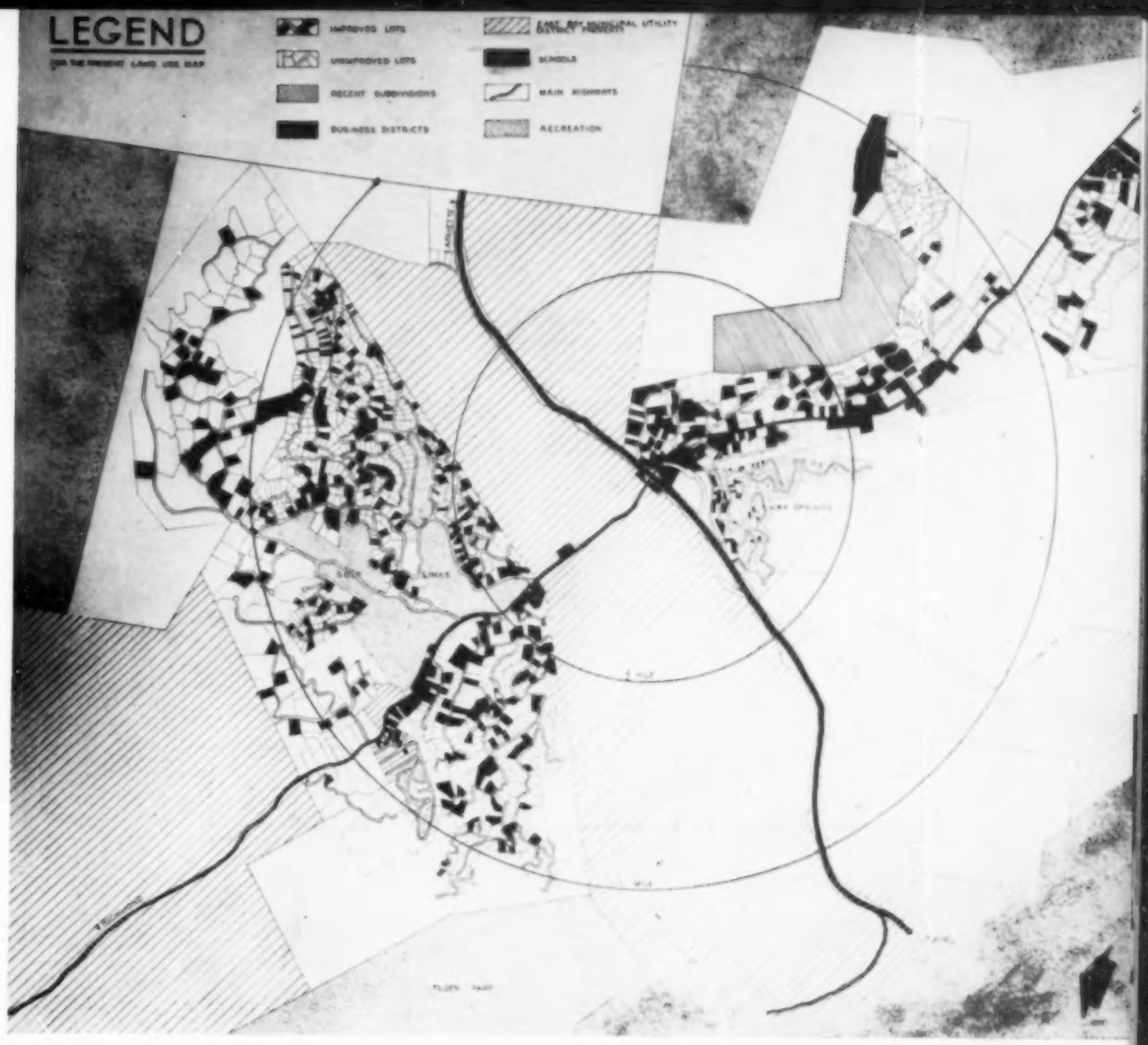
STUDY CONDUCTED BY THE SCHOOL OF ARCHITECTURE, UNIVERSITY OF CALIFORNIA

Under the direction of
Prof. HOWARD MOISE
Architect

ELLIOTT JOHNSON
TEFVIK KUTAY
HENRY LAGORIO
Graduate Students

ELVA SPIESS
Senior Student in Economics

The Orinda study, a plan for the development of the residential community of Orinda, was undertaken at the request of Orindans, Inc., a citizens' group organized to promote their community's betterment. Orinda is an unincorporated community, with no specific boundaries; so, the boundary of the primary school district was selected as the most suitable area for study. Throughout, every effort was made to keep the project realistic. The students consulted with the sponsoring group, County Planning Commission, School Board members, representatives of the State Department of Education and Division of Highways, and County Park Commission, as well as with the local fire chief and several professional planners—among them, Deming Tilton, director of the San Francisco Planning Commission, and Ronald Campbell, director of the San Mateo County Planning Commission. Architects with whom problems were discussed included Michael Goodman of the School of Architecture faculty, and John Reid of Ernest Kump's office.



PRESENT
LAND USE MAP

According to the planners, the major community problems at present are:

1. It is cut in two by the highway (northeast-southwest) and the Moraga-Richmond road in the other direction.

2. No means exist to protect the community against the increasing traffic hazards.

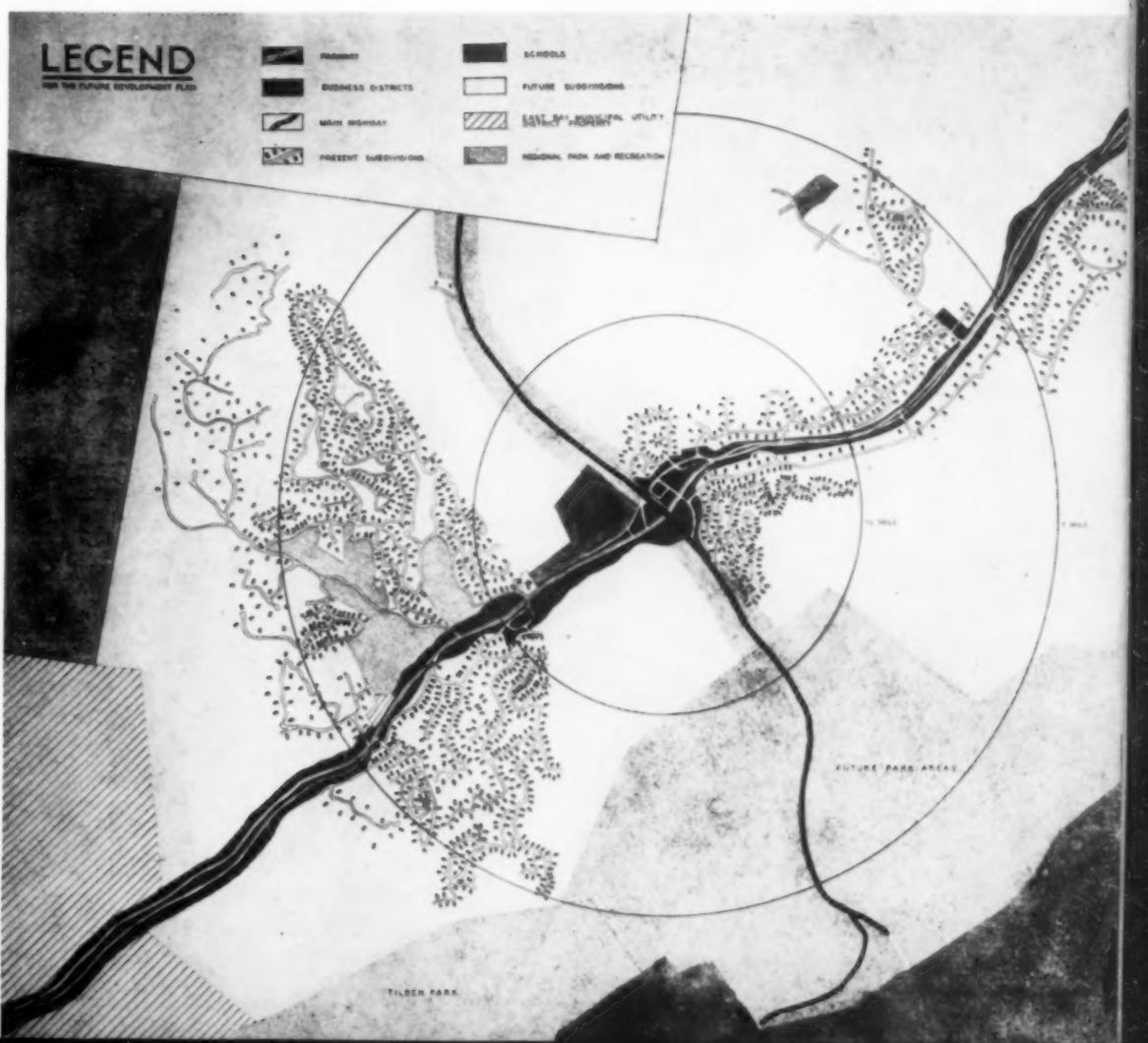
3. Present haphazard growth straddling the highway is undesirable.

4. Land values are unprotected by adequate zoning.

5. School facilities are inadequate.

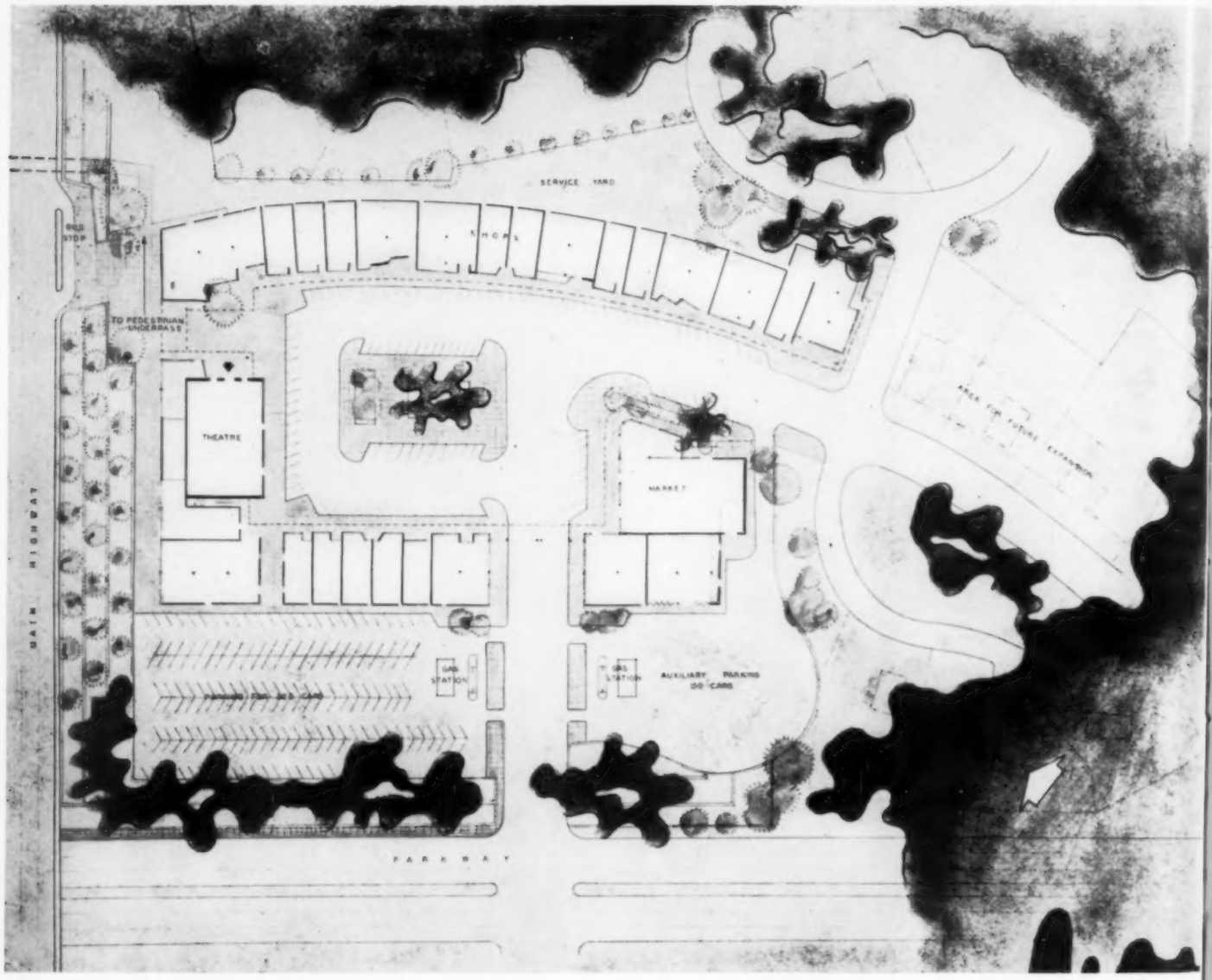
6. Recreational facilities are inadequate.

7. Increasing population cannot be accommodated by the present use of septic tanks.

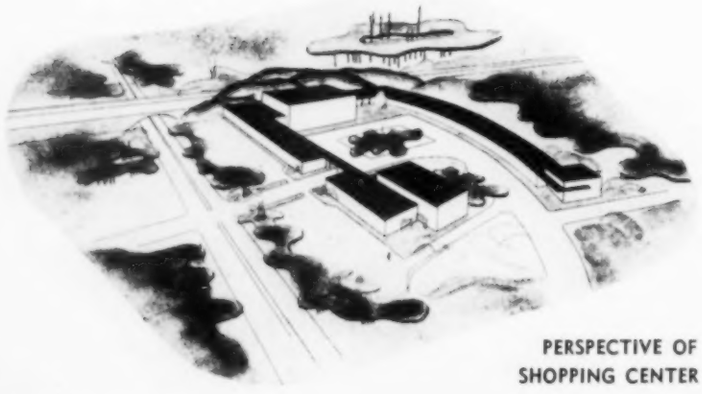


FUTURE
DEVELOPMENT PLAN

A questionnaire sent to every boxholder in the postal district yielded a surprising return of more than 33⅓ percent. From this were gained the breakdown on church affiliations, recreation needs, a strong affirmative vote for a sewerage system, the desired shopping facilities, types of professional and business services offered, and sizes of families by age groups (to indicate the school needs). In this future development plan are shown the proposed limited-access parkway to replace the present Moraga-Richmond road, zoned business districts (in black), best areas for continued residential expansion, school districts, and areas to be used for park and recreation.



PLAN OF THE SHOPPING CENTER. The theater is an existing structure; parking is both within the plaza and in an area toward the new parkway.



PERSPECTIVE OF SHOPPING CENTER

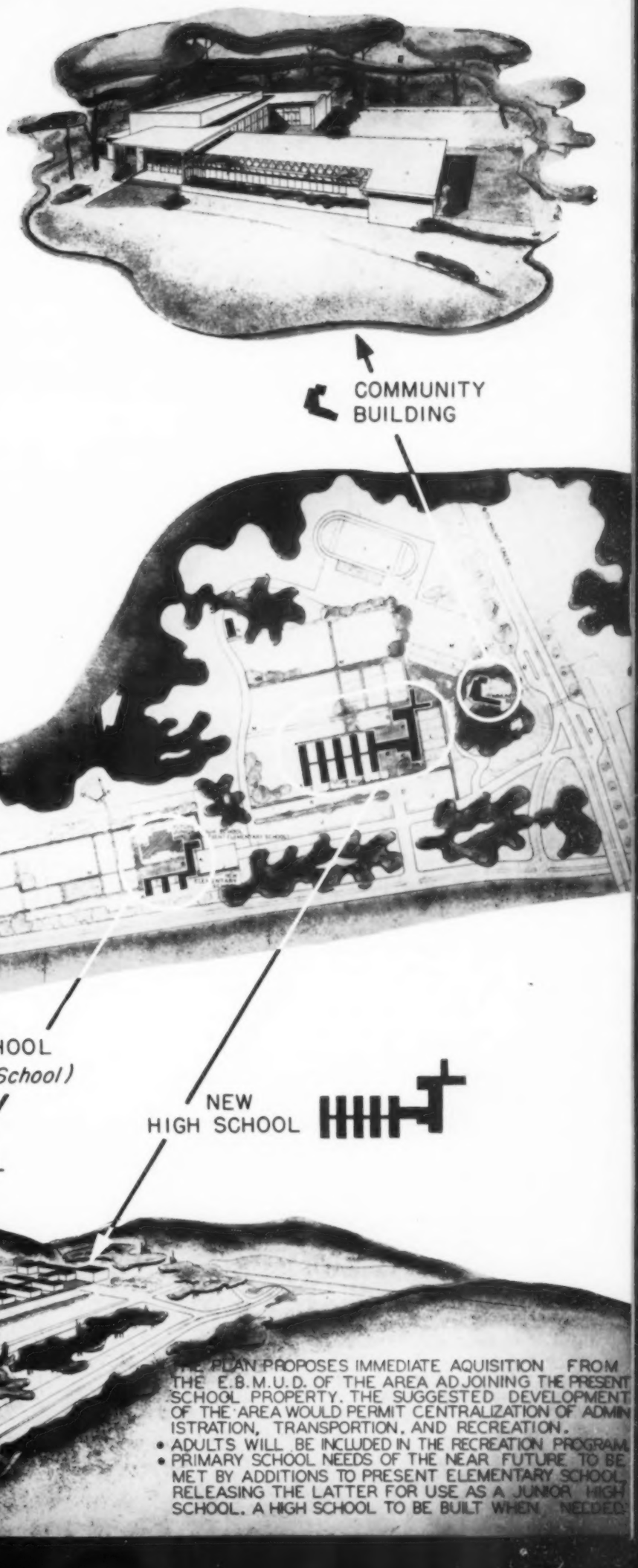
PLAN FOR ORINDA, CALIFORNIA

The proposed shopping center (planned for possible expansion) is located at the main crossroads, but free from highway conflicts, with the highway an overpass at this point, and the proposed parkway passing under it (see perspective). This grade separation is deemed essential for the protection of life and amenity of adjacent building sites and to prevent the ultimate deterioration of the community. By locating the parkway somewhat south of the existing Moraga-Richmond road, the old road becomes the turnoff into the shopping plaza. Henry Lagorio is chiefly responsible for the shopping center design.

SCHOOLS AND COMMUNITY CENTER

One of the most gratifying things to come out of the study to date is that the school board promptly set about trying to acquire the only suitable land available for future use. The community center plan includes a large "amusement room," with stage; storage rooms for various activity groups, a public lounge, several club-meeting rooms and an outdoor terrace, horseshoe pits, play space for children. Location near school buildings assumes that many facilities would be used interchangeably.

The zoning proposals, not shown here, are developed around the desirability of maintaining the community's rural-residential character. They recommend establishment of larger minimum lot sizes than the present 5,000 sq. ft., areas to be set aside for agricultural and park use, and establishment of a scenic easement along the highway and parkway. For the school designs, special credit is due Tefvik Kutay; Elliott Johnson designed the community center building and drew up the zoning proposals. Miss Spiess was in charge of assembling factual data.


COMMUNITY BUILDING
FUTURE JUNIOR HIGH SCHOOL
(Present Elementary School)
NEW HIGH SCHOOL
NEW ELEMENTARY SCHOOL
THE PLAN PROPOSES IMMEDIATE AQUISITION FROM THE E.B.M.U.D. OF THE AREA ADJOINING THE PRESENT SCHOOL PROPERTY. THE SUGGESTED DEVELOPMENT OF THE AREA WOULD PERMIT CENTRALIZATION OF ADMINISTRATION, TRANSPORTION, AND RECREATION.
• ADULTS WILL BE INCLUDED IN THE RECREATION PROGRAM.
• PRIMARY SCHOOL NEEDS OF THE NEAR FUTURE TO BE MET BY ADDITIONS TO PRESENT ELEMENTARY SCHOOL, RELEASING THE LATTER FOR USE AS A JUNIOR HIGH SCHOOL. A HIGH SCHOOL TO BE BUILT WHEN NEEDED.

EDUCATIONAL FACILITIES

During the period of reconversion of the construction industry, there will not be sufficient building materials to meet all the demands of the five-year backlog of residential, industrial, commercial, and public building construction. It seems reasonable and just that the Government should give high priority to the construction of homes for veterans.

The veterans will want schoolrooms for their children as well as homes for their families. Since the military draft did not exempt fathers, and discharge points were allotted for wives and children, a large percentage of veterans now wishing homes have children of school age. It is estimated that it will require about 75,000 classrooms to serve the 2,700,000 veterans' homes in the Wyatt program. It may be argued that these children are now in school and that many of the new homes will be built in the same districts where the children now attend school. This, however, is only a half truth. Many of the veterans' homes will be erected where very inadequate school facilities exist. It may also be expected that much of the housing will be developed in areas where there are no schools at all. By and large, the schools are as inadequately housed as the veterans' families. The schools of the nation are now suffering from a three billion dollar shortage in physical facilities due to deferred construction.

School boards are now required to file applications for construction authority on Form CPA-4423 with one of the 71 CPA Construction Field Offices. If priority assistance is required to secure materials, school boards file CPA-541A forms with the Washington Office of the Civilian Production Administration for a CC rating which is not sufficient to acquire the 11 most critical materials. School authorities may therefore be denied the opportunity to construct urgently needed facilities, even to serve veterans' housing projects, unless schools are placed in a more favorable bracket than provided in present regulations.

RAY L. HAMON
Chief, School Housing Section,
Division of School Administration,
U. S. Office of Education

Mr. Hamon's plea for a higher priority rating for school construction points up an aspect of the present situation which is not generally understood: even though the local CPA office may grant the right to build, this merely permits the applicant to join in the mad scramble for available materials. Nothing except a high priority rating helps in this free-for-all (for all PERMITTED construction). Failing the high priority rating, the necessary structure—such as a school—becomes a design problem in non-critical materials, just exactly as many structures permitted during the war were. THE EDITORS

In the present building emergency, what may well happen in many cases is that a portion of a job will go ahead, even though the total project cannot be realized at once. The Haughton school here presented is a pertinent instance of a school planned so that future expansion would require but a minimum of change to the existing structure.

The reinforced concrete canopies above the window bands control the sun during the school period. Classroom windows run from wall to wall and are placed above the seated pupil's eye level for eye comfort. Ceilings are surfaced with acoustical tile.

Photos by Doug Perry

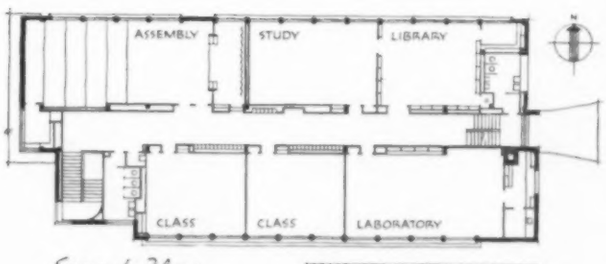
HAUGHTON HIGH SCHOOL, HAUGHTON, LOUISIANA

SAMUEL G. WIENER, Architect

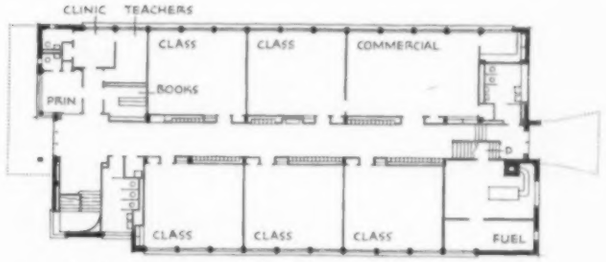
The new high school shares use of a gymnasium and auditorium that are connected with an older, elementary school on the same site.

The new school plans are essentially self-explanatory. As high-school needs expand, the building may be extended to accommodate additional classroom space without upsetting present arrangements. Another feature of flexibility is the modular mullion-column framing system that allows change in size of rooms (by simple shift in partition location) without conflicting with odd-shaped interior piers or necessitating change in external appearance.

The assembly room on the second floor is used for band practice, dramatics, and community assemblies in addition to its use as a meeting room for the entire school body. There is no basement, but the heater room is two feet below the first floor level. Construction is of concrete frame with brick walls.



Second Floor



First Floor

RECREATIONAL FACILITIES

Recreation is an essential phase of individual and community life. Throughout the country local authorities have accepted responsibility for providing recreation areas, facilities, and programs on a neighborhood and city-wide basis. People are increasingly demanding that adequate recreation opportunities be made available near their homes and during twelve months of the year.

Cities today are spending great sums of money to acquire needed recreation space in built-up neighborhoods where a few years ago land was available at low cost. The execution of the proposed National Housing Program will reduce the open space in existing neighborhoods and will cover with homes large areas in and near cities where limited recreation properties are already inadequate. To prevent a duplication of past mistakes and to assure residents of new housing developments a reasonable opportunity for a well balanced recreation life, recreation needs must be considered in the initial conception of every housing project.

The provision of recreation areas to serve people to be accommodated in new housing is primarily a problem in neighborhood and city planning. The individual or agency developing a project should therefore consult with the city planning authorities and the recreation, school, or other local municipal agencies responsible for the city's recreation service, and together with them work out a plan that will assure the provision of adequate permanent recreation space to meet the needs of the people to be housed.

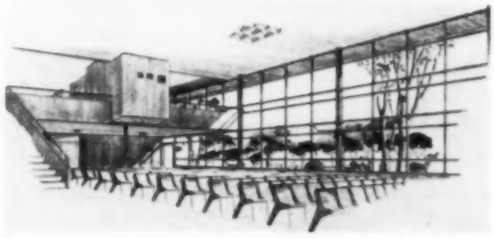
The development of the outdoor areas and the construction of essential recreation buildings may need to be postponed until the present housing shortage becomes less acute. We must make sure, however, that in solving the immediate housing problem we do not create future slums. In all large-scale home building plans, provision must be made for permanent open spaces which are so essential to the fullest enjoyment of life in the new neighborhoods to be created.

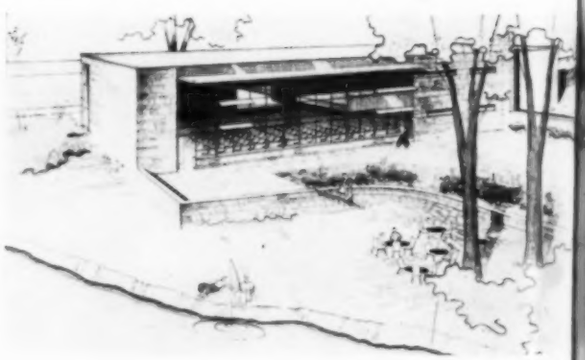
HOWARD BRAUCHER
President, National Recreation Association

Mr. Braucher points out the importance of including proper recreation facilities in any soundly planned community.

One of the best ways possible to make this ideal a reality is through the medium of the war memorial, the living memorial that makes for healthier and more pleasurable living at the same time that it appropriately honors the dead. The recreation building shown on these two pages is a splendid example.

Photos of renderings by Harvey Croze of Cranbrook



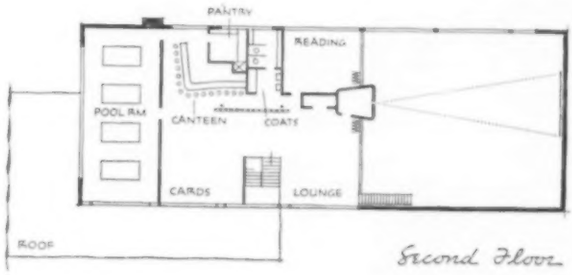


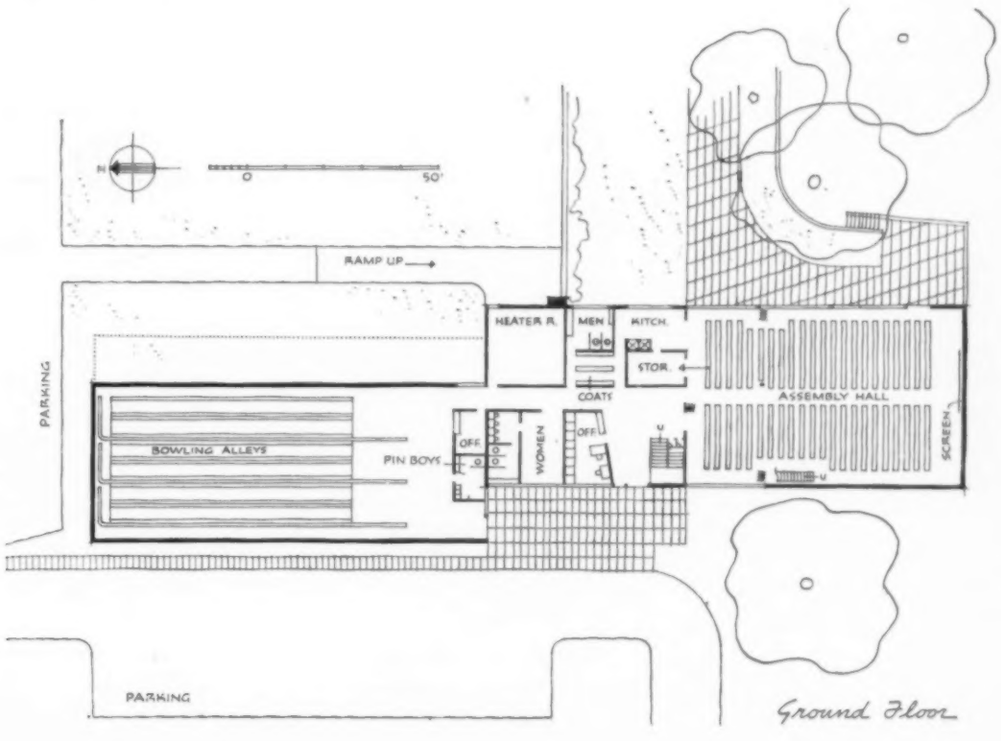
VETERANS MEMORIAL BUILDING, LAPEER, MICHIGAN

SAARINEN, SWANSON and SAARINEN, Architects

Initiated by veterans' groups, chiefly the American Legion, this is a project that is receiving enthusiastic support from the entire community. As soon as construction is permitted, plans will go ahead with as much of the building as the budget will allow. Since the building is in project stage, specifics are not as yet determined.

The assembly room, with serving kitchen alongside, anticipates varied use—as a lecture hall, movie house or (cleared of chairs) for formal functions, dances, etc. Remarkable flexibility is achieved by the folding partitions at the rear of the assembly hall on the ground floor and in the lounge-balcony area above.





HEALTH FACILITIES

Even before the war, the rapidly increasing health and hospital consciousness of the general public was being reflected in the tremendous expansion of coverage by the Blue Cross and similar prepayment hospital plans. Today, almost one out of every four individuals in the United States is covered in some type of such plan, and these plans have only within the past few years progressed beyond the experimental stage.

Our soldiers experienced a high quality of medical care during their sojourn in "the healthiest army in history." They are going to expect similar standards for their families in civilian life.

Offices and other facilities must be provided for medical personnel released by the armed forces if they are to make their services available to the communities so urgently in need.

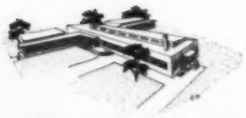
There are at present 1250 counties in the United States which do not have hospital facilities. Of these counties, more than 700 have populations exceeding 10,000 people. Only wise planning on a tremendous scale can provide sufficient facilities to meet the existing need for hospitals and allied health facilities.

Immediate action is necessary if we are to save more of the 40 out of each 1,000 babies born alive but who die within infancy, and more of the 25 mothers out of each 10,000 who die in childbirth. Beds must be provided for the thousands of tuberculosis patients who now must forego proper treatment and remain as menaces to the public. Additional facilities must be supplied for the 5 out of every 1,000 persons who are now the unfortunate victims of mental disease.

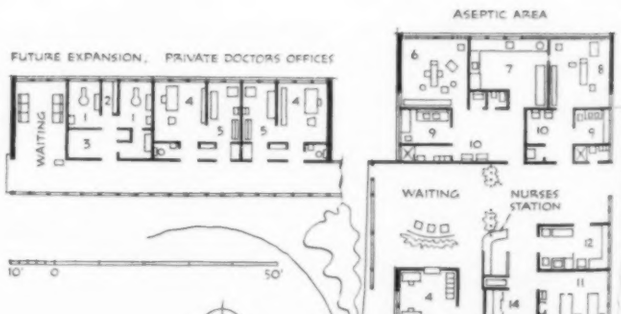
Sickness, disability, and death rates are too closely correlated with adequacy of health and hospital facilities to be questioned. We cannot afford the economic loss even though we close our eyes to the human suffering that is a necessary concomitant.

The architects of this nation have a distinct and leading responsibility to assist in guiding their own communities into logical channels in allocating materials, funds, and efforts in arriving at a solution which will be most beneficial now and later. Proper solution of these problems cannot be made without active participation of the architect.

V. M. HOGE
Senior Surgeon-in-Charge,
Hospital Facilities Section,
States Relations Division

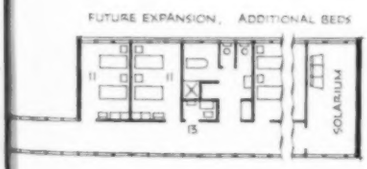


As a possible answer to one of the most difficult of the health-facility needs of which Dr. Hoge speaks—the rural health center-hospital—this USPHS design is exceptional in that it suggests inclusion of surgery, inpatient nursing units, and even private offices for local doctors and dentists along with the basic health-center facilities. As Dr. McGibony cautions in the discussion across the page, however, this combination, while highly desirable in certain localities, is by no means to be generally recommended, and that the health-center facilities are not affected if some of the elements are omitted. Laid out on a modular basis, the scheme is flexibly arranged so that the local architect may readily adapt it to specific community requirements.



THE SMALL HEALTH CENTER-HOSPITAL

HOSPITAL FACILITIES SECTION, U. S. Public Health Service



PLAN HIGHLIGHTS

Nursing and administrative supervision maintained from a central point; desirable exposure for inpatient areas. Compact emergency surgery and obstetrics unit, with only a pass window for sterile supplies between work and delivery rooms. Limited driveways for both service and main entrances.

For economy and to avoid over-building, minimum initial construction is recommended, with future expansion (to meet any of a number of specialized local needs) possible on any axis of circulation; this scheme also permits separate nursing units for different categories of patients by simple duplication of the nursing unit shown.

Special credit for development of the plan should go to Basil Yurchenco, one of the staff architects of the Hospital Facilities Section.

Knowing full well that the proposal here made—that a small rural health center might be combined with some limited inpatient care—is a controversial one, we are happy to present a digest of a realistic, objective study of the facility prepared by Dr. J. R. McGibony, Senior Surgeon, Hospital Facilities Section, U. S. Public Health Service.

ARGUMENTS CON: The construction of hospitals of less than 30 to 50 beds has long been controversial despite the fact that about 50 percent of the general hospitals have less than this number. Admittedly they are disproportionately expensive both to build and maintain. Thus, under ordinary circumstances one would hesitate to recommend that a community embark on such an expensive and possibly unsatisfactory venture. Every alternative should be fully explored.

ARGUMENTS PRO: Despite the higher costs involved in the construction and operation of small hospitals, many communities desire such institutions. They point out correctly that local facilities are essential to serve their health needs. Family physicians are not prone to transfer average cases to hospitals even 15 to 20 miles distant, nor is such

an arrangement satisfactory to patients and their families.

COORDINATED PROGRAM: Any community plan will benefit by coordination with the total state program. Operation of the local institution should contemplate affiliation with neighboring hospitals and medical centers. Only by some such arrangement can fully adequate care be assured with limited facilities, staff, personnel, and equipment.

BED ESTIMATE: The figure of 4.5 beds per thousand of population has been determined necessary to meet total needs, but in rural areas it is believed that 2.5 beds per thousand should be sufficient for the average community. Primary and secondary medical centers in which are concentrated specialized skills and facilities will serve patients referred from outlying areas as well as from their immediate areas; the ratio of beds then naturally becomes higher for the resident population of a given urban area. This does not mean a different requirement for rural and urban people, but an adjustment of bed concentration in accordance with ability to render a comprehensive service.

The rural health center-hospital will tend to make the community healthy and hospital conscious by concentrating on normal obstetrics. Hospital care for general disease conditions would, of course, be furnished to the limit of adequacy of facilities.

SITE: Generally speaking, the small rural health center is better patronized and can discharge its community obligations more efficiently if it is located as near as possible to the center of the town or the village. This is particularly true if public clinic and private physicians' offices are combined with bed facilities. Traffic and other objections in cities are not often of great import in the smaller community.

FACILITIES: For hospital purposes alone, approximately 575 square feet per bed are necessary to provide bed space and all adjunct services. Bed rooms are designed preferably for two but never for more than four beds in a small facility, each bed requiring at least 80 square feet in the room. Additional space required for public health activity will of course vary, but at least 2,000 square feet will probably be necessary. For private physicians' and dentists' offices and examining rooms, a minimum of 300 square feet for each office may suffice, exclusive of waiting rooms.

REMODELING: An existing home or a building not designed as a hospital usually proves the most expensive of ventures when converted to hospital use. Upkeep is higher, efficiency, safety, and sanitation more difficult, remodeling expensive, constant, never satisfactory.

CONSTRUCTION COSTS: To the local costs of ordinary building construction must be added approximately 20 percent to cover the unusual and expensive methods, materials, and equipment required for hospitals. Loose equipment will amount to from $500 to $800 per bed, or approximately $1 per square foot of hospital floor area. Supplies, to begin operating, amount to about $200 per bed.

OPERATING COSTS: Only hospital services are considered, as public health activities will vary. The major expenditures for the average small hospital are for personnel, food, and other supplies, all of which are proportionately higher than for larger institutions. Experience indicates a rough budget divided as follows:

Salaries and wages	50%
Supplies and equipment	20%
Foodstuffs	15%
Heat, light, power	5%
Repairs and replacement	5%
Insurance and miscellaneous	5%

PERSONNEL: The smaller the institution the higher the proportion of salaries, as there is a limit to patient-personnel ratio in rendering even minimum adequate care. Hospital administrators recommend 1.5 employees per patient in the smaller units. An absolute minimum for the 10-bed health center-hospital might be considered one employee per bed. Additional services would have to be contributed through clubs or other organizations and by private nurses. The following minimum is suggested:

1 Director-chief nurse	$3,000
2 Staff nurses @ $1,800	3,600
1 Clerk-stenographer	1,500
1 Technician	1,800
2 Attendants	1,200
1 Cook	1,500
1 Assistant cook	1,200
1 Laborer	1,200
Total personnel	$15,000

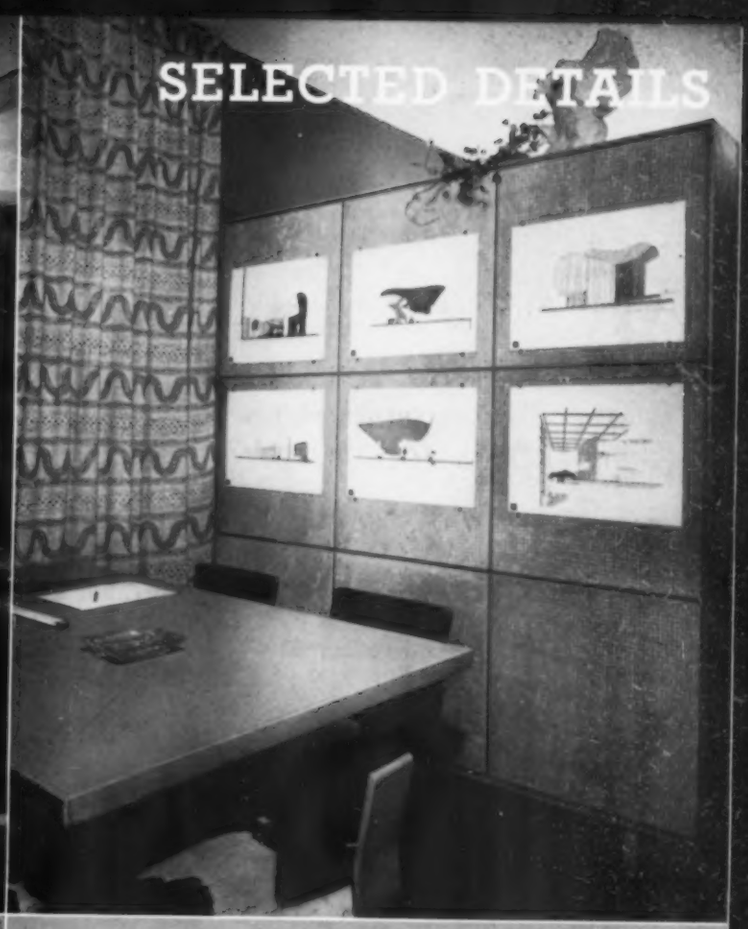
BUDGET: Total estimates, based on experience, would indicate that the 10-bed unit would cost the community as follows:

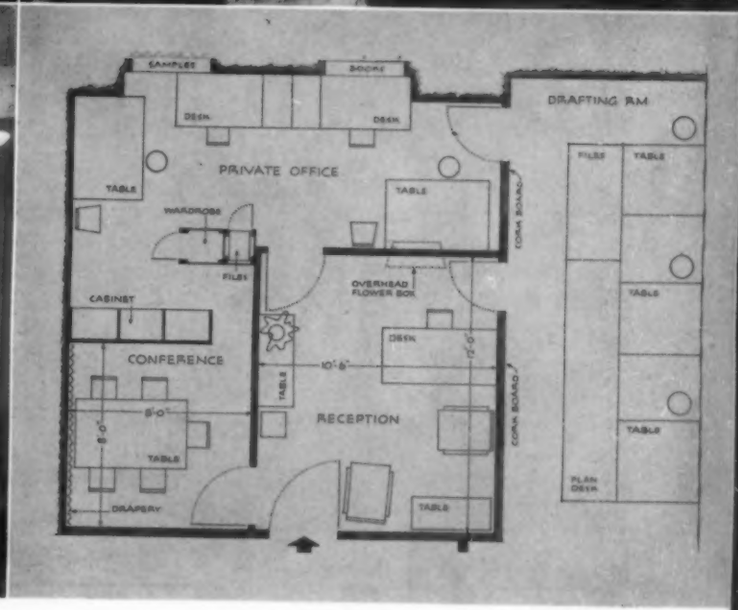
Salaries and wages	$15,000
Supplies	4,700
Equipment	800
Laundry	1,500
Light, power, repairs	1,000
Insurance, miscellaneous	1,000
Total annual cost	$24,000

Since no hospital can expect 100 percent occupancy (we can assume that there will be an average of 7 patients for 10 beds), the cost per patient would be $9.40 each day, and this with a minimum staff.

These theoretical figures can probably be reduced in actual practice, but it can be seen that hospitals are expensive institutions and, the smaller they are, the more expensive they become per patient. It may be difficult for the average community requiring only this small unit to operate it successfully without outside aid or by some assured method of prepayment.

However, from the standpoint of cost, the question may be, not that the community cannot afford it, but, measured in lives and suffering, that it cannot afford to be without it.





Photos by P. A. Dearborn

(Details on following page)

INTERIOR OFFICE DEVELOPMENT

ARCHITECT'S OWN OFFICE
NEW YORK, N. Y.

REISNER & URBAHN
Architects

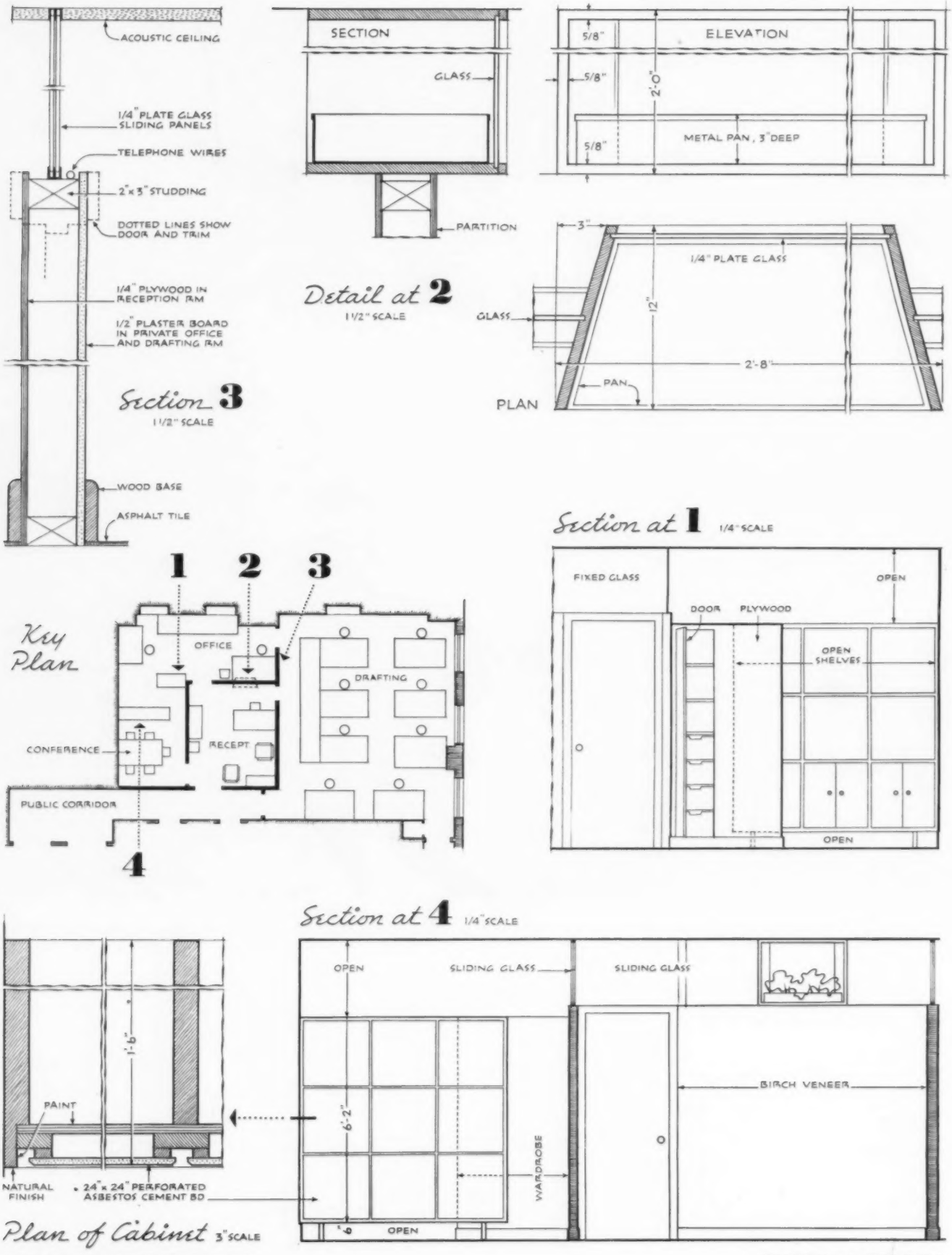
Interior office space, 20-odd ft. from windows, required special treatment:
Partitions door height, sliding glass above for light, ventilation, unity
Portable cases separate office, conference room; simplify any future moves
Conventional techniques and materials used throughout to reduce costs

Result: Contemporary design approach provides good working conditions and surroundings which impress clients favorably.

Photos show, top left, reception; top right, conference; below, drafting room.

(Photos on preceding page)

INTERIOR OFFICE



ARCHITECT'S OWN OFFICE
NEW YORK, N. Y.

REISNER & URBAHN
Architects

DISPLAY OFFICE

(Details on following page)

Hedrich-Blessing

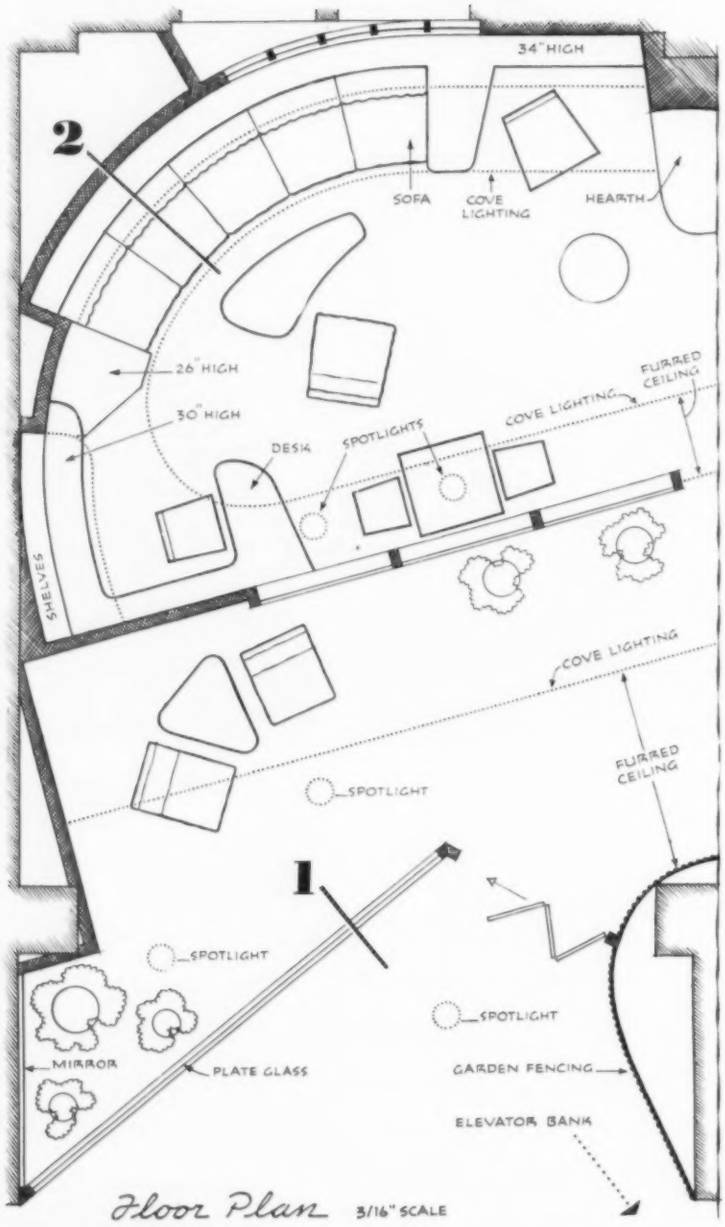
NO-SAG SPRING CO.
CHICAGO, ILL.

ALEXANDER GIRARD
Architect

The problem here was to design offices containing a showroom in which the No-Sag Spring Co. could display its products (springs for upholstered furniture—hence the slogan on the wall); and also, as the plan on the following page shows, to make the full depth of the display space apparent from the elevator lobby. To assist in both purposes, lighting is by means of ceiling coves designed to pull attention to the interior of the space. The lobby wall is full glazed, with an adjacent mirror wall which makes even the remote corners visible from the elevator doors.

(Photo on preceding page)

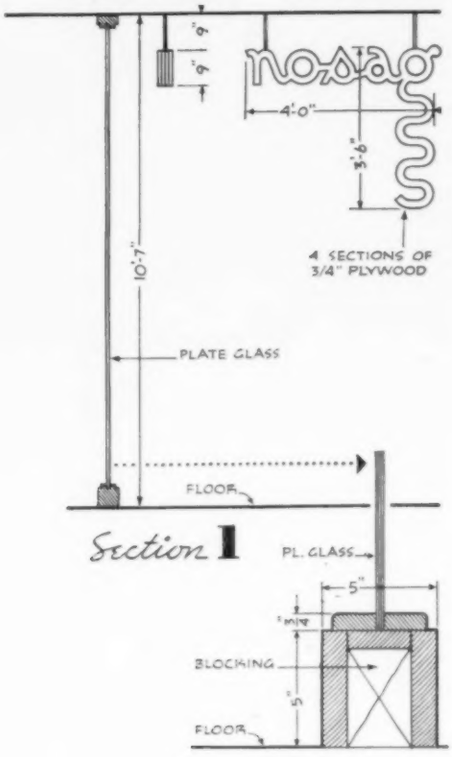
Hedrich-Blessing

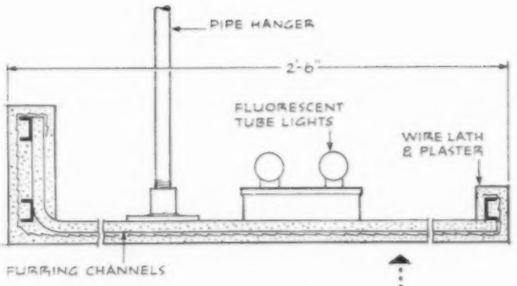


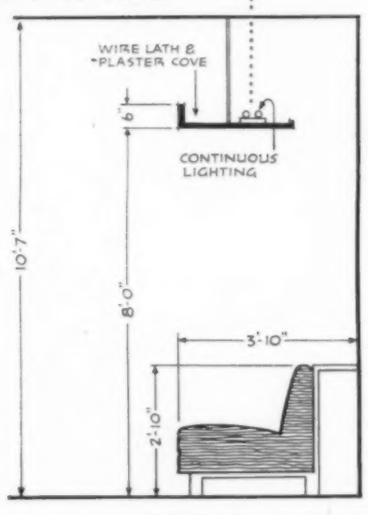
Floor Plan 3/16" SCALE

NO-SAG SPRING CO.
CHICAGO, ILL.

DISPLAY OFFICE







ALEXANDER GIRARD
Architect

Left to right, three Swedish examples of sincere cooperation: wood arches, indoor tennis court, Ahrbom & Zindal, architects; reinforced concrete trolley-passenger shelter; steel-arched bus garage, Stockholm, Eskil Sundahl, architect.

COOPERATION? BETWEEN ARCHITECTS AND ENGINEERS

by PAUL WEIDLINGER

Based on a lecture delivered at the Harvard University Graduate School of Design in January 1946.

Any kind of technical project incorporates, in some stage of its development, the work of the structural engineer or stress analyst. The importance of his work, along with that of other specialists, varies with the character of the project, which is largely determined in the frame of the whole technical design work.

The design of buildings, though superficially it bears quite a similarity to other types of technical design problems (see illustrations), somehow does not parallel them exactly —at least *in our time*, and I like to emphasize this—in that structural considerations are less important as criteria. I do not intend to discuss the reasons for this, but because there is no clearly determined place for the structural concept, collaboration between architect and structural engineer is generally far from perfect. This is most regrettable. I am quite sure the situation can be improved by both architect and engineer, if both will attain mutual understanding, insight into, knowledge of, and respect for each other's fields. As I said, all this has to be mutual. But, because I am an engineer among architects, I am going to concentrate first of all on the kind of knowledge and understanding we engineers prefer you to have. Also, because I am sure that you have ample opportunity to obtain all the specific information you need, there is no need to go into detail about this knowledge; but I shall discuss the controversies and trends in contemporary structural engineering.

Discussion of differences among engineers, although it is taboo and not to be debated with architects, can be helpful in understanding the way of thinking and method of approach of the structural engineer, with whom the architect's fate, for better or worse, brings him into contact.

INFLUENCE OF THE ARCHITECT

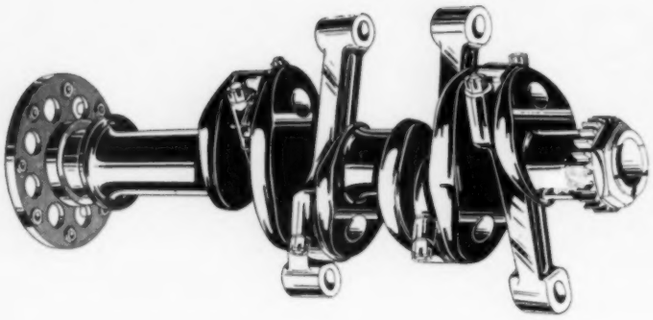
The architect's contribution to the structural design of a project is quite important. The architect is usually expected to have a so-called "working knowledge" of engineering. This (of course, with notable exceptions) could more properly be called "working ignorance." That situation has to be remedied in the very near future if architecture is to survive and play an active role in the advancement of civilization. Unfortunately architects have to budget their time and energy carefully to acquire knowledge of their own complex field, and consequently cannot reasonably be expected to master thoroughly all problems of advanced engineering. Substituting this so-called "working knowledge" for a thorough knowlege leads almost invariably to one of two attitudes. *Number one:* The architect believes that his engineering knowledge covers everything which can possibly be known on this subject. He believes himself to be almost an engineer who, except for lack of time, interest, or the accident of circumstance, would be able to take over the structural design of his project. In reality his knowledge, a few years after he has left college, boils down to a memory of a much abused formula, $M=\frac{wl^2}{8}$. . . .

Attitude number two: He believes engineering is a subject which can be approached only by those who are highly skilled in the mysterious and inexplicable art of higher mathematics and the use of the slide rule. He furthermore believes that, although he lacks such talents, the Lord has provided the architect with the equally inexplicable, mysterious faculty of intuition, which gives him an insight into all structural matters . . . it must be added, though, in all truthfulness, that when it comes to actual execution of his design he would rather rely on the engineer's slide rule than on his own intuition.

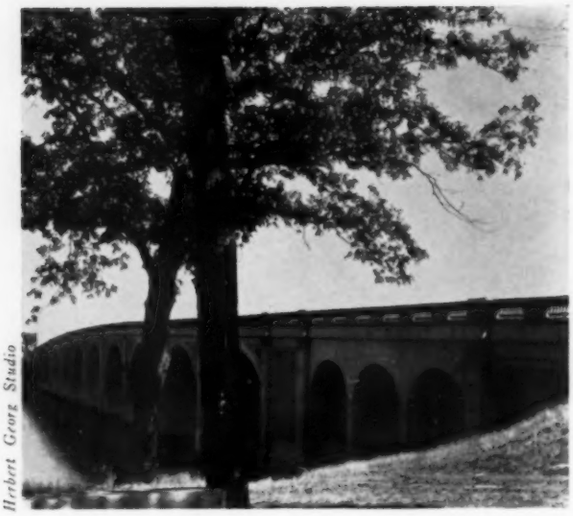
Obviously neither of these attitudes is very satisfactory. Fortunately one has but to look around to find architects whose work, not only in its structural but in its other concepts, reflects a knowledge and understanding of *all* the problems involved. In spite of the somewhat dark picture I have painted, a great many good examples of this type of work can be found.

At its best, the design of a building is the result of an intelligent and creative collaboration between architect and engineer; at its worst, a compromise. To obtain the best results, the architect not only has to be acquainted with the most complex structural problems which might arise, but

ANALYSIS



1 *STRUCTURAL ENGINEERING PREDOMINANTLY ANALYTICAL:* crankshaft of an internal combustion engine transmits known forces over a given distance, but with little efficiency as far as structure is concerned; the purpose of the mechanism dominates design. Structural engineering in this case is almost entirely restricted to checking dimensions, occasionally to varying form slightly in order to hold stresses and strains to safe limits. Illustration courtesy *Aviation*.



Herbert Georg Studio

2 In the reinforced concrete Vachel Lindsay Memorial Bridge, Springfield, Ill., the requirement of traditional masonry-arch shapes—a totally unnecessary postulate—reduced the engineer's creative design work to little more than checking stresses in the arches and foundations. The arch soffits are arbitrarily semi-elliptical.

COOPERATION BETWEEN ARCHITECTS AND ENGINEERS

he has to understand all their implications—although he is not required to solve them; more important is the ability to explain these problems to the engineer in intelligent, familiar language.

I also believe that an intuitive understanding of structural problems has a proper place if it is supported by factual knowledge which is not limited to a small, elementary region of engineering, but is extensive and well informed. The architect thus armed is able to make the most use of the skills of his structural engineer.

NATURE OF ENGINEERING DESIGN

The architect is in a position from the beginning to exert great influence on the approach to the problem. The engineer's initial approach often depends on the restrictions or freedom inherent in the project in its over-all concept of structure. The engineer might begin by analyzing some typical parts of a design and determining from them the character of the whole; or he might use his imagination in finding the structure most suited to the design as a whole.

These two basically different approaches roughly correspond, in their broadest interpretation, to the processes of *analysis* and *design*.

Analysis can be defined as a method of determining all important conditions in a given structure under the action of known forces. In the simplest case this corresponds to checking stresses and other data pertaining to a structure against the provisions of a building code or against the physical characteristics of the materials used. Such a process clearly comes under the headings of "strength of materials" and "stress analysis." (See illustration No. 1.)

Design is the method used to obtain a structure for the specific purpose of transmitting known forces over definite distances. The meaning of this definition is illustrated by the problem of designing a simple roof truss: this involves first of all finding the most suitable type of truss for the specific purpose, which is design in its clearest form.

Ordinarily neither of these two methods can be used alone. They supplement each other in almost all problems, but the predominance of either one of them in the initial approach—and also during the whole work—has great importance. At first thought it may seem illogical to try to represent them as two distinct, controversially opposed methods. But, as I will show, there is opportunity for quite a bit of heated discussion of the subject. It is obvious that certain kinds of problems predetermine the approach: the spillway section of a gravity dam is predetermined by hydraulic requirements and what remains is stress analysis, i.e., checking to see if it is strong enough to resist the exerted water pressure. But in the design of an industrial building, the type of framing selected has a great influence on the predominance of design or analysis. For a given clear span, height, and column spacing several types of roof framing could be selected. The choice itself, of course, is clearly a design consideration, but once this choice is made the question of predominance is easy to see. If steel trusses are used, the main problem is developing the particular framing system of the roof truss. Once this has been accomplished, the rest is routine checking and selection of members.

On the other hand, if a reinforced concrete barrel-shell roof is chosen, the shape of the structure is predetermined by the selection of the barrel shell, but the main dimensions are obtained by analytical work.

Naturally the decision as to whether to use a structural steel truss or a reinforced concrete barrel shell is not based solely on the particular architect's like or dislike for this shape or that, or on the disposition of the engineer toward stress analysis or design, but we have to admit that very often it is greatly—sometimes unnecessarily—influenced by these factors.

Let us take a closer look at these two concepts.

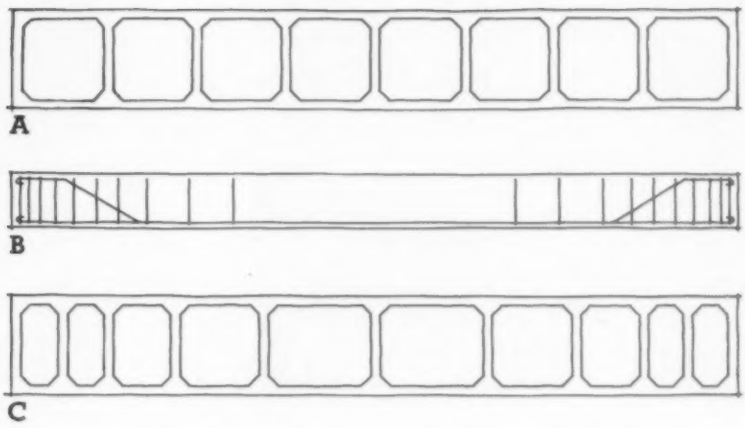
THE SHERLOCK HOLMES APPROACH . . .

The **analytical solution** requires in some problems quite an impressive mathematical instrumentation. This might easily frighten off the uninitiated; unfortunately it also offers an excellent opportunity to hide behind scientific-looking formu-

G. E. Kidder Smith

Portland Cement Assn.

3 Top, boat passenger station, Rio de Janeiro, Brazil (Corrêa Lima, Architect); below, Armstrong Tire and Rubber Co. plant, Natchez, Miss. (Roberts & Schaefer Co., Engineers). In both reinforced concrete barrel-shells, once the desired span and column spacing are determined the engineer's work becomes analysis, highly intricate, of stresses in shell, edge beams, and diaphragms. To comprehend the theory of thin shells deep insight and knowledge of mathematics are required.



4 The Vierendeel truss, essentially a series of hyperstatic frames of rectangular or trapezoidal panels, has been and is still opposed for such stated reasons as lack of rigidity and economy. In truth, the opposition is more probably due to the almost prohibitive amount of work required in its complex analysis, which has obscured its value as far as purely design considerations are concerned. Yet up to 10 years ago more than a hundred bridges of this type had been built in both steel and reinforced concrete, also arc-welded steel trusses. The usual design appears in sketch *A;* but the verticals act similarly to stirrups in reinforced concrete beams *(B);* ideal Vierendeel truss *(C)* has even more complex analysis.

las a lack of imagination, or an inability to cope with problems in their over-all aspects. What it really requires is not so much great mathematical knowledge, but, rather, courageous, logical thinking and inventive talents in the field of the exact sciences. Mathematics plays the role of a very sharp instrument, and all assumptions have to be quite precise, but the final results have to be adjusted to the crude reality of our presently available construction practices and methods.

Professor Hardy Cross expressed this quite pointedly in the discussion of a paper on the design of symmetrical concrete arches, the content of which has since become standard equipment of the structural engineer. His words also show the sharpness of the controversy on this subject:

"The writer thinks, however, that from the viewpoint of practical design the mathematical theory of the rigid fixed arch is being overdone. . . . The theories of arch analysis which are now being elaborated in engineering literature are distinctly 'highbrow' in that their elaborateness camouflages with erudition uncertainties and inaccuracies which are inevitable." And finally he writes, ". . . Arch designs would be improved if a great deal more time were spent on studying foundations at the expense of the time devoted to the arch stress. . . ." *(Trans. Am. Soc. C. E., 1925, Vol. 88, p. 1076.)*

This criticism by Cross is that much more justified because he was not content merely to criticize a practice of which he disapproved, but also contributed very excellent suggestions and developed brilliantly simplified methods of analysis to replace what he calls "highbrow" theories.

But an equally distinguished engineer finds quite enthusiastic words of praise for the methods of exact and clear analysis. He writes:

"The analysis of engineering problems . . . can be an exceedingly fascinating pursuit; as fascinating, say, as a game of bridge, a cross-word puzzle, or a cryptogram. One starts with a supply of fundamental physical knowledge, and, with mathematics and physical knowledge as tools, attempts to build the solution to his problem. . . . His (the engineer's) mathematical tools must be sharp, so that he can more easily manipulate his material. . . . Most problems necessitate considerable mental effort . . . where he (the engineer) must be ready to put forth his best efforts. It is this part of analysis which is the most fascinating and challenging . . . mathematics has a double role in engineering: that of providing a quantitative basis for analysis and that of providing the background for a more clear and thoroughly physical understanding of engineering phenomena. The former function is an obvious one and of recognized importance in all branches of technical engineering, but it must be admitted that most practicing engineers use, in their day-to-day work, only a small portion of the mathematics they once studied." (W. C. Johnson: *Math. & Phy. Prin. of Eng. Analysis, McGraw-Hill, 1944.)*

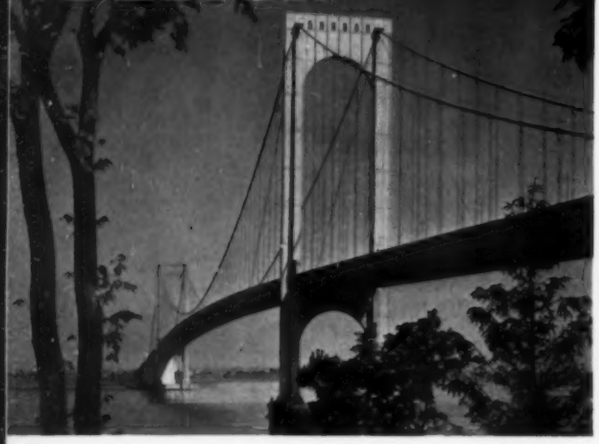
This point of view emphasizes, in addition to the usefulness of the analytical approach, the heuristic pleasure derived from such work. There is a great temptation to lose one's self in a playful search of theoretically accurate solutions and to forget the ultimate aim of obtaining a workable design, even if all data cannot be established with an accuracy which would justify the exactness of the analysis.

VS. EMPHASIS ON STRUCTURAL FITNESS

The conception of the **design** approach takes just these facts very much into consideration. The work is synthetic. One concentrates on the idea of finding a specific structure which is capable of transmitting forces over a definite distance. Quality of design is judged on the basis of economy in number of elements and simplicity and clearness of their forms. This kind of approach results at its best in daring, original solutions, but like its counterpart, can easily become a hiding place for those who lack elementary understanding of scientific discipline. Good design solutions are often spectacular in their conception. The temptation to strive for originality, with disregard for all other requirements, is very great, as anyone who has tried it can testify.

Every architectural problem can be regarded as a challenge to invent the structure most suitable for its purpose. All

DESIGN



Rodney McCay Morgan

1 ***STRUCTURAL ENGINEERING PREDOMINANTLY DESIGN:*** **Bronx-Whitestone Bridge, New York. Bridge design is closer than other structural problems to the definition of the "design" approach: to find a structure for the specific purpose of transmitting known forces over definite distances. This principle, if followed uncompromisingly, should satisfy all formal or esthetic requirements. Suspension bridges utilize tensile qualities of cables or chains to the utmost; their curves are determined by structural requirements.**

from Circle, Faber and Faber

2 **Rosengraben Bridge, near Schwarzenburg, Switzerland (Robert Maillart, Engineer). Built in 1932, this bridge employs an arch shaped to utilize fully the compressive strength of concrete. Note the discontinuous soffit curve, pointed in the center like a gothic arch. Maillart satisfactorily proved, in 1934, the rationality of this shape based solely on structural considerations; he also criticized the practice of making soffit curves look like traditional masonry arches.**

COOPERATION BETWEEN ARCHITECTS AND ENGINEERS

too often this tends to cause concentration on the specific differences of the given project in order to obtain an original, sometimes extravagant solution, instead of accentuating its relationship to other similar structures. I think in our civilization the solution based on a skillful application and adaptation of a reduced number of standard elements deserves more attention than the ever-so-much-more original but "custom-made" solution, which represents rather an escape from the social and economical realities of our time.

Both design and analysis have their important place in the workshop of the structural engineer. The methods are far from being irreconcilable, and the architect can reasonably expect the engineer to master both even if he has a preference for one. It is important that the architect understand and find out from the beginning of their cooperation which the engineer prefers, and try to adjust and complement it with his own ideas during the initial stages of the mutual creative process.

AS TO ACCEPTANCE OF INNOVATIONS

Speaking of particular preferences, it is useful to keep in mind that, all in all, there no doubt has been more harm than good done to the advance of engineering by incessantly calling attention to the uselessness of exact, refined analysis of problems. In general, the knowledge of the average engineer lags behind scientific advance in his own field. As in other technical professions, there is resistance to any innovation which requires either additional learning or the use of more than elementary arithmetic. Fortunately the resourceful pioneer has found ways of overcoming his own colleagues' passive resistance. It is very interesting to examine the methods (and tricks) used to introduce through the back door advanced ideas which otherwise would be refused entrance. These ideas enter after unsuccessful attempts in several disguises. One common "trick," if I may use the expression, is to reduce all mathematical work to the very simplest arithmetic, either by the preparation of extensive tables and curves or by inventing ingenious methods which do not require any mathematical instrumentation at all. One of the most brilliant is the now widely used moment-distribution method, introduced by Cross. This method accomplishes the solution of continuous girders and rigid frames by a series of simple arithmetical operations, and also focuses attention on the physical phenomena of deformations, which are so characteristic of continuous rigid structures.

Previously, the same problem required at least the solution of a great number of simultaneous equations, or the use of extensive, cumbersome tables. In this sense the moment-distribution method is probably one of the most important contributions of the last decades, as it has made accessible to a large number of engineers a field of analysis which previously was avoided or replaced by sometimes naive approximations.*

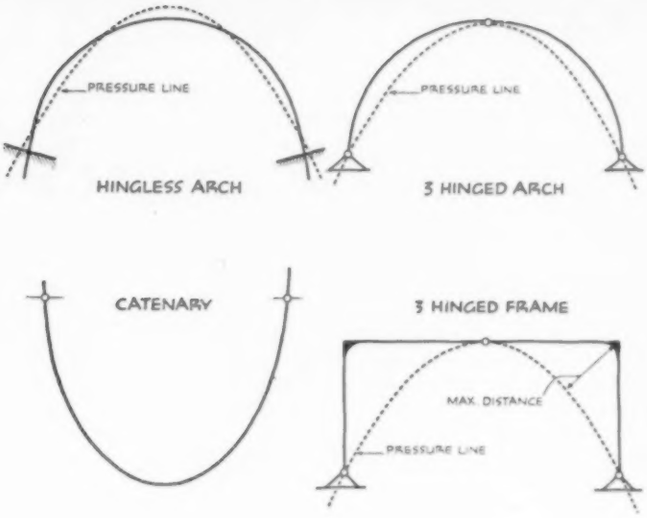
It is not often realized how much the willingness of engineers to investigate new methods has to do with acceptance of new or improved structural systems. New systems cannot find wide acceptance if their analysis is cumbersome. This, to give at least one example, is the only reason why the excellent Vierendeel trusses cannot attain their proper place among other types of structural framing. The Vieren-

* Another frequently employed "trick" is more interesting. It consists of translating the results of analysis into a language familiar to the engineer, by the use of analogies; the device permits use of terminology connected with the analogy, which is assumed to be well known. There are a number of examples. Problems in solving the deflection of beams require setting up and solving differential equations, but under certain conditions the deflection curve can be interpreted as a bending moment diagram, which to the practicing engineer is—and I should say, unfortunately—a more familiar concept than the deflection curve. Consequently deflection problems are solved by the familiar "conjugate beam method." Similarly, influence lines of continuous beams can be interpreted as deflection curves of the same beams under certain conditions. In a more recent innovation, the "column analogy," bents and beams of complicated shapes and varying cross-sections are laid down flat and considered as short columns, or rather as foundations. The pressure exerted by them on the soil is proportional under given circumstances to the stresses existing in them when they are "used" as bents or beams. Equally instructive is the "membrane analogy" used in the solution of torsional problems.

The common property of all of these analogies is the quite striking fact that their use does not represent any saving in calculations; their sole value lies in the ease with which the designer who uses them can grasp and memorize a procedure, due to the use of familiar terminology. As a matter of fact some of these methods even obscure the underlying physical principles. Whatever the methods' merits, they are extensively used, accepted, and considered quite traditional tools of the structural engineer. They deserve attention because they reflect a certain way of thinking which should be familiar to the architect who has to work with engineers.

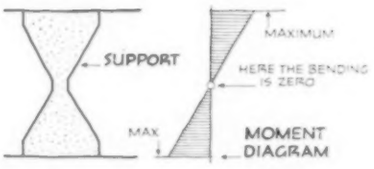
P. A. Dearborn

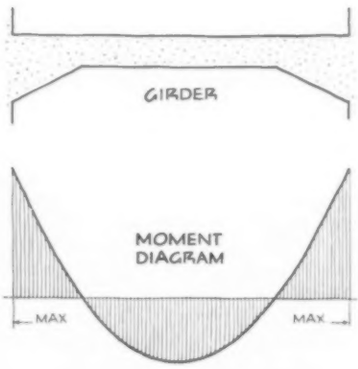
2 Bridge, Mt. Vernon Memorial Highway, Virginia. This "stone" bridge is in reality composed of reinforced concrete rigid frames of excellent design—camouflaged in deference to tradition. Remarkably enough, a photograph of this bridge is reproduced on page one of an excellent book on continuous concrete frames; the author, an authority on reinforced concrete design, is apparently embarrassed by forms developed exclusively from uncompromising design and analysis, for which he is an outstanding spokesman.



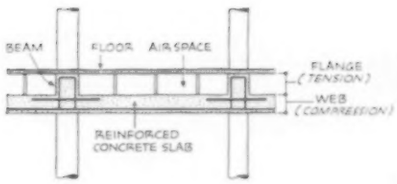
4 The "pressure line" shows whether a frame or arch is subject predominantly to compression or to bending. The nearer the pressure line approaches the center line of the structure, the less is the bending induced by loads. Where the pressure line intercepts the axis of the structure, bending is zero. Hinges cannot transmit bending (rotation); therefore the pressure line always passes through them. Note how the pressure line "hugs" the hingeless arch, which is predominantly in compression. Corners of the three-hinged frame are farthest from the pressure line; at these points maximum bending is induced and heavy haunches are required. The "catenary" is the "pressure" line—more properly, "tension" line—of a heavy chain or cable; both are flexible (a series of closely spaced hinges) and therefore unable to transmit any bending; the suspended cable coincides with its "pressure line."

from Architectural Review, London

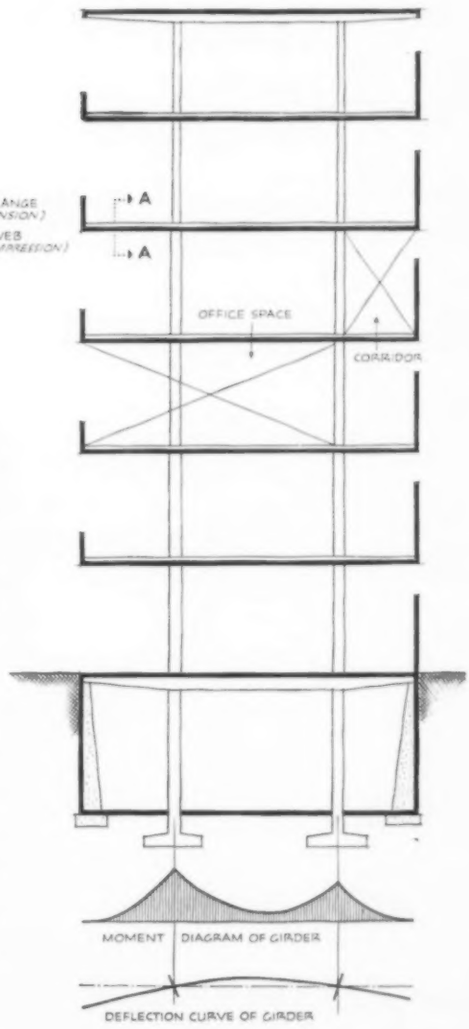




5 Top, Pont de Vessy, over the River Aare, Switzerland (Robert Maillart, Engineer). Note the shape of the supports, which conform exactly to structural requirements for transmitting linearly distributed bending moments and shear. This somewhat unfamiliar form is based on the identical principle that governs the haunched shape of beams restrained at their ends, as shown in lower sketch.



Section A-A



6 Reinforced concrete office building, La Paz, Bolivia, designed by the author. The intent here was to satisfy the functional requirements of the office building: maximum flexibility for office space, furthered by eliminating exterior rows of columns; maximum daylighting (windows run to the ceiling); sound-insulating floors (aided by construction system); facilities for running electrical wiring, heating and plumbing piping (in the floor construction). Structural design is based on the typical reinforced concrete T-section, but since girders are continuous and cantilevered, deflection is such that their top portions are in tension, bottom in compression, and the T was inverted to bring the web and flange into proper position to resist each type of stress.

deel truss is neglected even today, in spite of the availability of several perfectly safe analytical methods. As there is no really compelling reason for its use, and it can be always replaced with the triangular truss, no design tables or satisfactory simplified methods have been developed, and consequently the structural engineers' inventory is missing an item of great interest and merit.

PRACTICAL CIRCUMSTANCES FOSTER WORTHWHILE INNOVATIONS

Up to this point such small controversies might seem to be on the purely theoretical or academic level. To put them into proper perspective one must relate them to the general advancement of technical civilization and economic development. If we do this, the little tempest in the academic teapot gains an added, deeper significance which is worth investigating.

Structural engineering not being an exact science, its development and advancement do not depend on basic research alone. It gets its impulse toward development of new techniques through the introduction and invention of new building methods and materials. The success of these new building practices or materials can break down the resistance of conservative engineers, especially if their conservatism is based not so much on a general philosophy as on resistance against acquiring additional knowledge.

AN EXAMPLE: REINFORCED CONCRETE

Let us consider the introduction and acceptance of reinforced concrete, which once certainly was a revolutionary innovation in the construction field. At its beginning, around 1850, there was no underlying theory for its proper use. Construction practice was based on crude experiment and imitation of other, already familiar, structures. In Europe it quickly became popular, although until the first scientific investigators published and tested the results of their methods, a number of erroneous conceptions were deeply rooted convictions among builders and contractors. Quite typical is the story of Monière, the inventor of reinforced concrete, who until his last day maintained that engineers who suggested placing reinforcement near the top or bottom of concrete beams, instead of in the center as he did, were misinterpreting and misunderstanding his invention. Only a number of quite disastrous accidents at the end of the 19th and the beginning of the 20th centuries convinced builders of the necessity of careful analysis and design.

But the design of reinforced concrete structures is inherently more complex than, for instance, that of riveted steel structures. The reason is two-fold. The material is heterogeneous, consisting of steel and concrete, and yet columns, plates, and girders poured in one piece become continuous and rigid frames. Both of these characteristics make analysis much more complicated than the design of independent columns supporting simple beams, which is the characteristic of simple riveted steel structures. To this complexity I attribute much of the early resistance reinforced concrete encountered in the United States, a resistance which, I think, can be felt even at the present time. As far back as 1888 three great reinforced concrete hotels were built in St. Augustine, Florida; and in 1903 the very notable 18-story Ingalls Building was erected in Cincinnati, Ohio, with a reinforced concrete frame. But these were notable exceptions. Fortunately, in addition to the academic interest of progressive scientists and engineers, the more powerful interests of the cement industry entered into the picture, and their powers of persuasion exceeded those of the engineers.

THE MANUFACTURER'S INFLUENCE

Those who manufacture Portland cement—and theirs is now one of the ten leading industries—exerted great pressure to encourage general acceptance of their product. This pressure was applied not only in general promotion work, but in furthering research, theoretical as well as practical. Eventually the industrial interests succeeded, in the sense that concrete and reinforced concrete are now widely accepted, but the ensuing situation is somewhat awkward. Small contractors and conservative engineers continue to erect large numbers of reinforced concrete structures designed in the manner used in the design of riveted steel structures, with maximum economy and minimum effort, not in cost or materials, but in thought, creative spirit, and brainwork on the part of the authors. This is really not necessarily an entirely negative qualification. I believe that these types of construction have their place, justification, and significance in the economic and social order in which they are conceived and built. But if the effort is to advance our civilization, I think we have reached a saturation of this type of building. It is time to concentrate on more advanced, more suitable, methods. It is fortunate that the work of a large number of engineers and architects reflects comparable convictions. Their excellent structures exist today, side by side with the unimaginative ones. The same discrepancy is reflected in our building codes. Codes incorporate low working stresses to take care of the blundering of some, while at the same time they adopt design methods which take advantage of the results of latest developments and advanced research.

Naturally more compelling reasons formerly influenced American builders to try to avoid reinforced concrete buildings. An important one is the fact that reinforced concrete construction practice was more of a handicraft than the erection of shop-fabricated structural steel sections. Modern reinforced concrete practice has eliminated this difficulty to a great extent, and the material has proved itself comparable to steel construction in speed of erection as well as in economy. Nothing but the prejudice of certain engineers against the analysis of continuous rigid structures can explain the resistance which reinforced concrete encounters at the present time.

CONTROVERSY OVER WELDING

Quite a similar situation can be observed in the case of welded steel structures. Apparently here also, to those who try relentlessly to prevent its use, the continuity of the structure seems to present insurmountable difficulties in design. While welding of pipes and tanks has practically displaced riveting, the use of welded connections and parts in structural steel was not generally permitted under any city building codes before 1940. The pressure of material shortages and continued efforts of progressive engineers has at last succeeded in giving a good start to a great development, signs of which probably will be seen in the years to come.

KNOWLEDGE GAINED IN WAR: THE ARCHITECT'S RESPONSIBILITY

The knowledge of the practicing engineer, in analysis as well as design, increases constantly. Great experience has been gained and substantial advances have been made in stress analysis, thanks to the impulse given by the requirements of aircraft design.

For the architect, the most important aspects of this advance are embodied in experience gained in the analysis of shapes which previously were considered almost inaccessible to precise computation, and also the use of new metals, alloys, plywood, and plastics. Experience in designing and analyzing odd curved shapes has familiarized the engineer with the process of three-dimensional consideration of his problems, and has enabled him to derive advantages which previously would have been considered extravagances. The whole trend is toward considering and analyzing structures not in their component parts, but as entities. I cannot over-emphasize the importance of this.

Finally, I would like to say that, though advancement in structural design is the business of engineers, the architect will have to bear no small responsibility for its application. Sharp methods of analysis and revolutionary design ideas recently developed will be used by structural engineers only if they are required—even forced—to use them. If architects are going to be satisfied to continue to request run-of-the-mill structural design for their projects, I am sure they will get it. But if they want to take advantage of engineering knowledge, of new developments and new materials, they themselves will have to become thoroughly familiar with them.

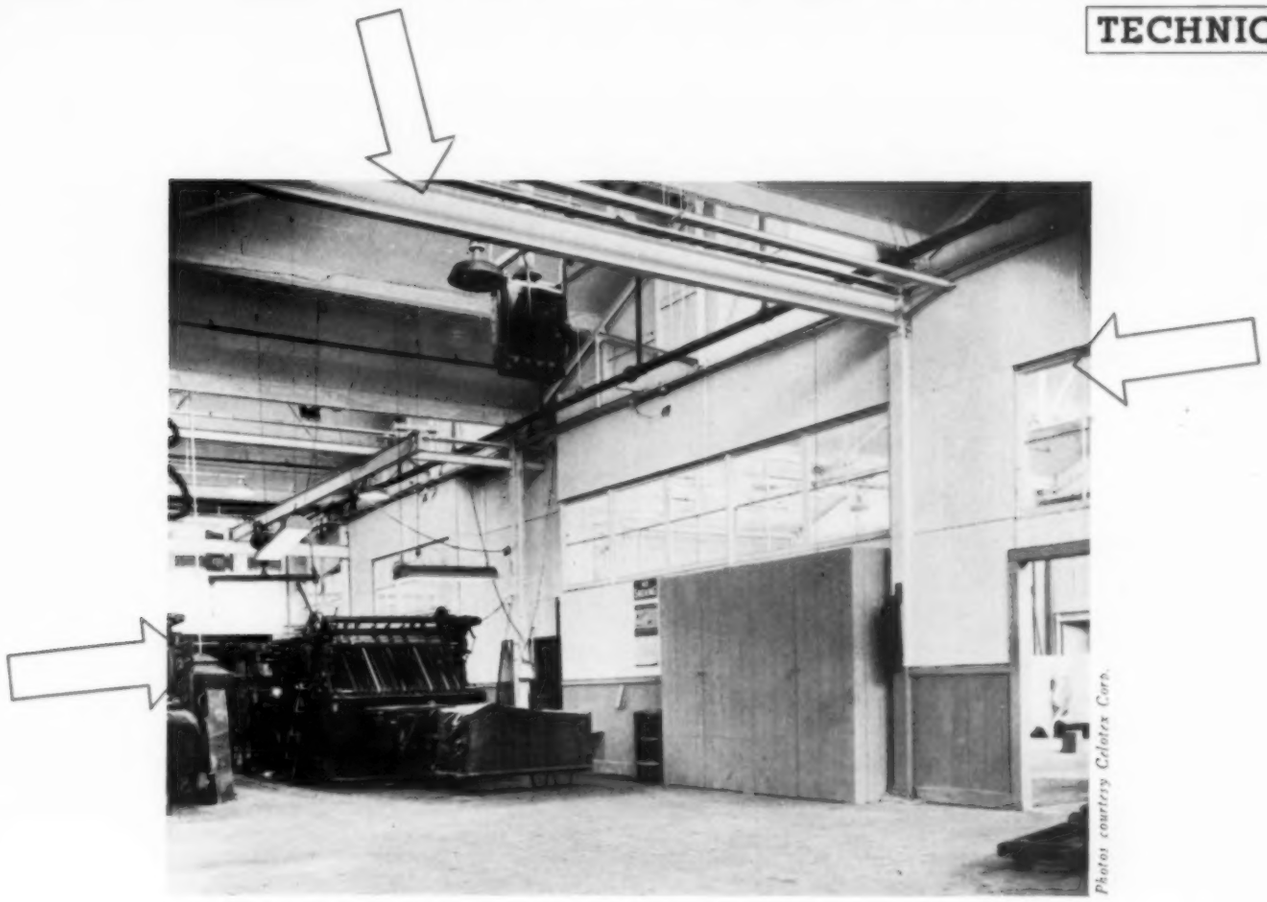


Photo courtesy Celotex Corp.

Sound-conditioned paper mill showing application of acoustical material to ceiling and side wall of a sawtooth building. Material used is Acousti-Celotex.

FACTORY NOISE

by HALE J. SABINE and ALLEN WILSON, Celotex Corp.

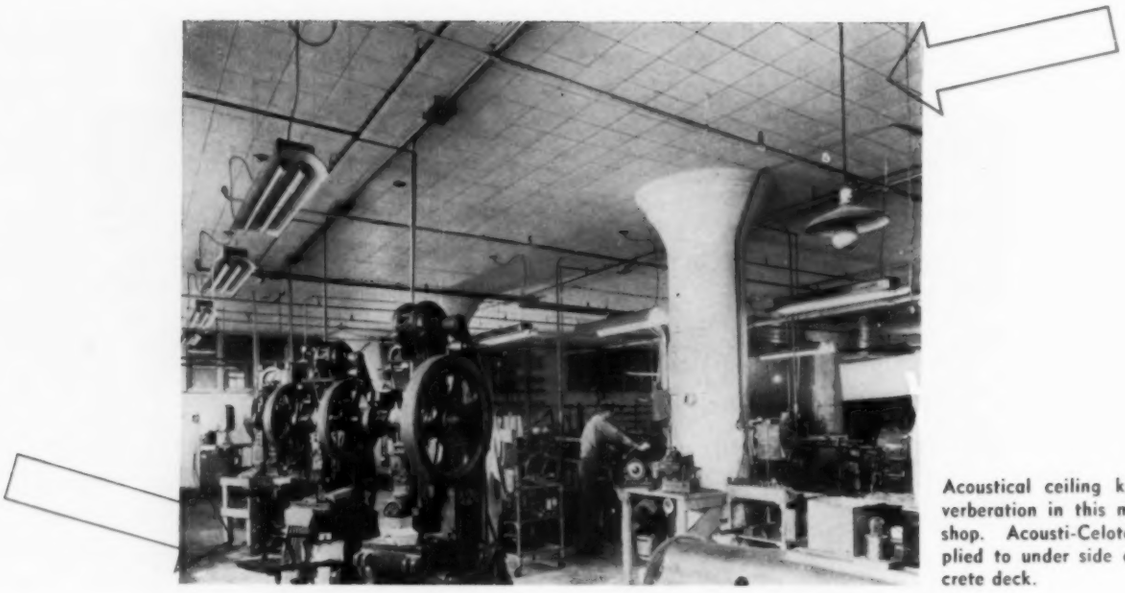
While there is little the factory architect can do about plant noise, there is much that he can do in determining to what extent workers within the plant are annoyed and distracted by it. The type of operation, the machines employed, the kind of materials being machined will set the intensity levels within the various plant areas. What happens to the sound after it leaves the machines and how the machines are placed or grouped in relation to each other will in most instances have as much to do with the "noisiness" of the plant in general as will the original intensity.

LOUDNESS DOES NOT ALWAYS ANNOY

Within the range of average factory noises, **loudness** and **annoyance** are far from being synonymous. Practical control of industrial plant noises must be approached with a full appreciation and understanding of the fact that loudness, which we accept generally as having a simple meaning defining the force of sound as heard by the ear, is in truth a complex reaction that results from the combination of sound pressure, or **intensity**, and the frequency of vibration, or **pitch**. Since there are very few, if any, pure tones in factory sounds, another factor enters, that is the sum total of all frequencies contained in the sound being heard at one instant. This combination is known as the **spectrum** of the sound. As the spectrum of a given sound increases in complexity, the ear's reaction is often one of increasing loudness even though the pressure, or intensity, remains fixed. It is this characteristic of sound that makes certain sounds seem louder, or "noisier," than others although their measured energy may vary little, or not at all.

However, these physical characteristics of sound do not label a given sound or sounds as noise. In searching for a term with well defined meaning for common use to designate noise, the Acoustical Society of America some years ago recommended **unwanted sound.** This term was adopted by the American Standards Association and is now in common use. When this definition is used, time, place, and psychological reactions become factors in noise along with the physical characteristics noted.

Considering all the known characteristics of noise, it is seen that the simple measurement of noise intensity is far from an absolute measure of annoyance. Experiment and



Acoustical ceiling kills reverberation in this machine shop. Acousti-Celotex applied to under side of concrete deck.

field results have shown that exposure to a sound having "raw edges" produces more discomfort than a similar exposure to sounds having less annoying qualities but higher intensity levels.

PRACTICAL NOISE CONTROL

Practical noise control, then, embraces manipulation of sound frequencies so as to filter out the most harassing components of noise; general suppression of the over-all intensity of a specific sound or ambient sound level; and prevention of noise spread into areas where it isn't wanted.

While it is beyond the scope of this article to discuss in detail the physiological and psychological effects of noise upon workers, the efficacy of proposed noise-control measures cannot be evaluated accurately without considering some outstanding reactions manifested by exposed workers. To reemphasize, the purpose of noise control is to reduce annoyance and distraction caused by noise, which in turn produce fatigue and contribute to physical ill health. Therefore, successful noise control is in essence control and restraint of annoyance factors as well as suppression of physical sound. Since it cannot be hoped that a manufacturing process for shaping, forming, or assembling parts in metal, wood, stone, or plastic can ever be a truly quiet procedure, factories will probably always be noisy in comparison with offices. The aim of practical noise control should be that of creating a favorable environment for workers in the presence of necessary noise, as well as direct elimination of noise where possible.

NOISE LEVELS IN EXISTING PLANTS

Shortly after this country entered World War II, stepped-up production schedules centered considerable attention on the problem of industrial noise. As a result, the writers were engaged for some months in a field investigation program devoted to studying the behavior and effects of noise in manufacturing plants, and means of alleviating it by sound conditioning and other methods. The initial step in the survey was to determine the range of noise levels encountered in typical factories. Noise level measurements were made in 33 separate plants covering a wide diversity of industries and machine operations. Of all the readings taken in actual work areas, the highest was 130 db and the lowest 65 db. In the large majority of cases, the observed noise levels ranged quite uniformly between approximately 85 and 105 db. In order to obtain comparative data on the noise output of various types of machines, readings were taken wherever possible at a fixed distance of 3 feet from the principal noise-producing point of the machine. A few representative figures are as follows:

TABLE I. Noise levels of various machines at distance of 3 feet.

Punch presses, various types	96-103
Headers	101-105
Drop hammers	99-101
Bumping hammer	100
Hydraulic press	130
Automatic riveters	95-99
Lathes (average)	80
Automatic screw machines	93-100
Airplane riveting guns	94-105
Airplane propeller grinding	100-105
Cotton spinning	84-87
Looms	94-101
Sewing machines	93-96
Wood planers	98-110
Wood saw	100
Wire rope stranding machines	100-104
Ball mill	99

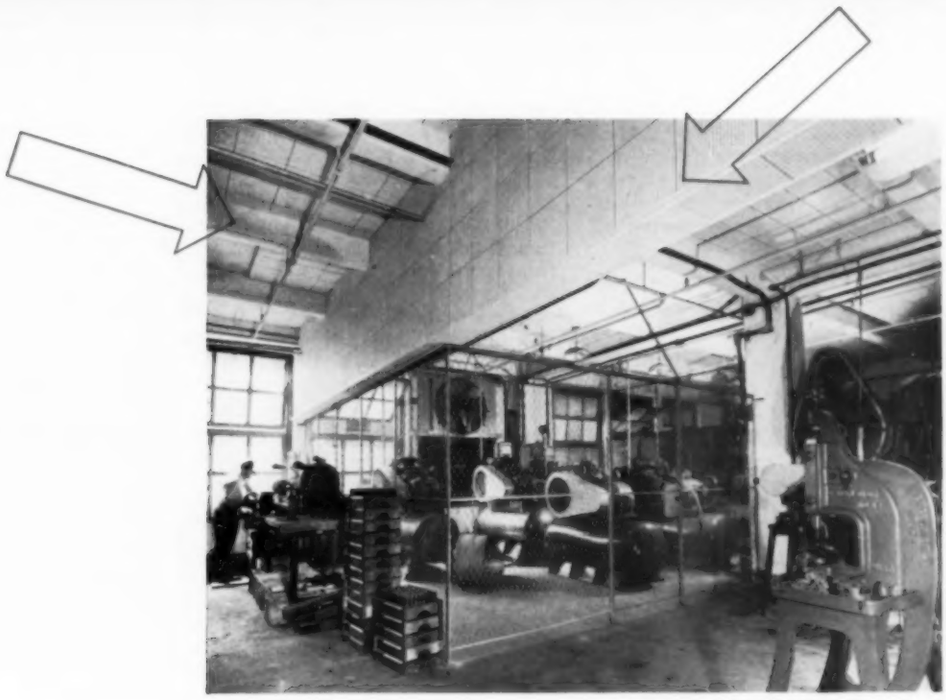
The decibel is the standard measure of acoustic energy. In the middle ranges of the decibel scale, a single decibel is approximately equal to the least change in loudness perceptible to the average ear. However, this relationship changes as the lower and upper limits of the scale are approached. At lower levels a change in an over-all noise level of four or five decibels is barely perceptible, whereas a change of about 0.3 is noticeable at noise levels in the 80's and higher.[1]

On the decibel scale, zero (0) marks a fixed value of sound intensity which is slightly below the threshold of hearing of the average ear, and 120 db marks the approximate point at which sound pressure becomes strong enough to be felt. This sensation of feeling is usually experienced as pain. The energy ratio between these two points is one trillion to one. An increase in intensity of 1 db represents an energy increase of 26%; a 10 db increase represents tenfold energy increase.

The data shown should be considered only as illustrative, since in many cases the noise level may vary considerably depending on the type of work or material on which the machine is operating. It should also be noted that since the operator frequently is closer to the noise source than 3 feet, the noise level at his ear may be somewhat higher than the values shown.

One of the first of several questions which arose was whether reductions in noise levels of the order of 5 to 10 decibels, theoretically attainable by means of sound condi-

[1] McCord, C. P.; Teal, E. E.; and Witheridge, W. N.: *Noise and its Effects on Human Beings*, Journal A.M.A., 19:110, 1554, (May 7, 1933)



Noise from these compressors is confined to the immediate area by combination of sound-conditioned ceiling and sound-absorbent baffle.

tioning, were enough to afford really worthwhile relief when applied to the range of noise levels (approximately 85 to 105 db) to which the average factory worker is exposed. Experience with a number of acoustical installations showed that very substantial relief from annoyance was possible, even under conditions where noise meter readings showed no significant reduction in noise level.

FACTORS OTHER THAN NOISE ITSELF

Corollary experiences revealed that it was often possible for an acoustically treated area to be more comfortable from the noise standpoint than an untreated area having an average noise level actually lower. From these observations it was soon concluded that factors other than the noise level itself contributed important elements to the over-all noise picture.

Frequency. One of the outstanding characteristics of the human ear is its extreme sensitiveness to different sound frequencies. Those sounds which lie within the frequency range to which the ear is most sensitive (approximately 1000 to 6000 cycles per second) will as a result of this tendency almost always "cut through" and be clearly audible above lower-frequency sounds which have considerably higher intensities. One researcher stated to the writers that his observations had led him to conclude that this would occur in some instances where intensities of the respective sounds differed as much as 20 db.

It has been known for some time that high frequencies not only are more annoying, but are also more harmful than the lower pitches. Perlman[2] reported from his experiments on human listeners that "sounds of low frequency produced less acoustic trauma than those of high frequency."

Recently the Armour Research Foundation was commissioned to make studies of and redesign a calculating machine for the specific purpose of reducing the noise it generated. During this program, the Foundation compared two calculating machines, "A" and "B," whose sound levels (weighting network C of General Radio 759B Sound Level Meter) were 70 and 73 decibels respectively. In acoustic energy, machine B emitted just twice the amount of machine A. Forty observers were requested to listen to each of these machines, and each was asked, "To which machine would you prefer to listen all day?" Of the forty observers, twenty-nine selected machine B, nine chose machine A, two were undecided.

Frequency analyses of these two machines showed machine A to have a lower sound level in the frequency ranges of 25 to 75, 75 to 750, and 750 to 2500 cycles per second, but that machine A had a higher sound level in the range of 2500 to 7500 cycles per second. The obvious conclusion is that, although machine A had a lower over-all sound level, it was nevertheless considered the more objectionable by twenty-nine out of the forty observers because of the larger percentage of its sound concentrated in the higher frequency range—2500 to 7500 cycles per second.

Source of noise. From the workers' viewpoint one of the cardinal points of noise control was found to be that no one seems to mind noise of his own making as long as that noise is below the level of actual physical pain. This holds true in ordinary factory operations, even when the noise produced reaches intensities known to result in hearing impairment after lengthy exposure. It is the "other fellow's noise" that wears the worker down. Noises coming from machines and operations other than his own, over which he has no control, always have an element of unexpectedness.

An equally important point appears to be the desire to be able to speak and be heard, and to hear when spoken to, without undue effort. An interesting sidelight on the effects of good hearing conditions is given in a reply one worker in an automatic packaging room made on a questionnaire inquiring into workers' opinions of improved noise conditions. He said, "Safety is affected. Warnings are heard easier. If I cry for help I could be heard quicker and easier."

An environment that protects a worker from the other fellow's noise, and permits him to carry on a conversation—necessary or otherwise—will, in comparison to other environments which do not meet these conditions, be judged relatively "quiet."

Reflected sound. It has been noted that noises traveling or spreading with little diminution in intensity, from sources located at a considerable distance from the hearer, have an irritating effect far out of proportion to their actual intensity. In many such instances, a modest increase in attenuation, or drop-off per unit of distance traveled, between the source and the worker will serve to submerge such noises below the level of his immediate vicinity. In effect, the source is moved out of his range. Investigation showed that these reactions are very nearly independent of the intensity levels involved.

Sound conditioning (by means of acoustical materials) acts upon the ambient sound level by soaking up a large percentage of sound that would otherwise be reflected back into the room occupant's ear. Consequently, in highly reverberant rooms, sound conditioning is especially effective

[2] Perlman, H. B.: *Acoustic Trauma in Man*, Arch., Otolaryng. 34:429, (Sept., 1941)

in lowering the general level by removing some portion of the total volume which is built up through multiple reflections of the original sound. This effect is manifested to the ear as removal of the "ringing" and "roaring" that characterize reverberant rooms, and imparting of a "deadened," "muffled" quality to the remaining noise.

Dr. Paul E. Sabine points out: "In a reverberant space, the worker has the sensation of working at a noisy machine in a noisy environment. Replacing the reflecting surfaces by absorbing surfaces reduces the environment factor, thus markedly reducing the annoyance, even though the measured level is not greatly reduced." [3]

WHAT DOES ACOUSTICAL TREATMENT ACCOMPLISH?

Frequency. Sound conditioning has an even greater effect in its capacity to change the frequency spectrum of the over-all sound. In general, higher frequencies are absorbed more readily than low frequencies. As higher frequencies usually constitute the more annoying component of the total intensity, the result is often marked relief, even with a very minor change in over-all intensity. At average factory noise levels greater relief may be expected from this function of acoustical materials than from its probable effect in lowering the total level. The National Safety Council [4] states: "It would appear that the character and quality of noise are of the greatest importance and, where noise cannot be eliminated, efforts at changing or supplanting the character of the sound have met with remarkable success."

In most factories high frequencies at high intensities constitute the greatest obstacle to intelligible speech. In checking the observable results of sound conditioning in the cupping and drawing department of a cartridge plant, the headquarters engineer reported that upon entering the plant after the treatment had been installed, the most noticeable effect was comparative ease of conversing. Yet general sound levels in these areas are in the neighborhood of 90 db.

Confinement of sound. Another consideration in using acoustical material is its influence upon the "spreading effect" of sound. In an open space the intensity of sound from a given source falls off rapidly as distance increases. In reverberant rooms the intensity of sound from a single source is almost independent of distance from the source—the sound spreads with little diminution in relation to distance. As absorbent treatment greatly reduces this spreading effect, the man working at a noisy machine has the feeling of a relatively quiet surrounding.[3]

The amount of relief obtainable by cutting down the spread of noise is influenced greatly by the spacing and layout of the machines in a given area, and by the type of noise they produce. The manner in which these factors affect the final result can be understood by considering the spreading effect in somewhat greater detail. It is well known that introduction of absorbing material in a room reduces the intensity of distant noise sources more than the intensity of sources close to the point of observation. Absorption is most effective at any given position as far as the ear is concerned, when before treatment the noise of distant sources is audible in the presence of nearby sources. In other words, no good will result from quieting distant sources if their noise is already completely masked by the noise of sources in the immediate vicinity. This means that wide spacing of machines, differing qualities of noise from various units, and intermittent operation of the machines, are all conditions favorable to the attainment of good results. For example, treatment applied over punch press areas in which the machines are spaced at least 5 or 6 feet apart has proved a distinct benefit to the operators.

AN EXAMPLE

Excellent results were obtained in the drop hammer and press room of a New England jewelry plant. This room is 60 ft. wide and 160 ft. long. Nearly half the room was occupied by drop hammers and presses. The other portion was occupied by small, relatively quiet machine operations. Noise from the drop hammers and presses spread throughout the entire area, in such volume that distraction and nervous fatigue interfered with the efficiency of the workers in the second department. Construction of any type of partition between the departments was impractical. Acoustical treatment was applied over the hammers and presses to a line forty feet beyond the location of the hammers nearest the small-machine department. The noise from the drop hammer and press department was damped sufficiently so that residual sound entering the second department was effectively masked out by the relatively low noise level in that department. As to the effect in the immediate vicinity of the hammer and press operators, the management reports . . . "Since the machine operators stand very close to their machines, we did not expect too much reduction in the noise level at these particular points, but after the installation was complete, there was a decided improvement for which the men are grateful."

Investigation showed that this improvement came largely from the removal of reverberation. Each hammer blow had previously set up an intensity level, near the 100 db mark, that was sustained for some seconds by the room itself. It is known that a certain amount of time is required for the ear to adjust itself to its full sound-intensity perception. Removing the sustained portion of the sound shortened its audible period and had the effect of decreasing its loudness.

OTHER CONSIDERATIONS

The manner in which hearing perception builds up to loudness as a sound persists is easily comprehended in the case of a sequence of short sounds. It has been observed that a full burst of six test shots in rapid succession from a 20 mm. cannon seems considerably louder than a single discharge.

The disturbing effect of noise spreading from a considerable distance can sometimes be further lessened, or completely eliminated, by the use of properly designed acoustical baffles placed near the source of the noise. These baffles are suspended from the ceiling to a height as near the source as practical. While the exact action of such baffles has not as yet been completely analyzed, observations and measurements made in actual installations indicate that the observed effects result from a combination of its action as a partial barrier and sound trap, and the high concentration of absorbing materials over the noise source.

When a number of continuously operating machines, having identical noise characteristics, are spaced very closely together, there is negligible possibility of relief by the use of absorption for workers in the midst of the machines. If, however, only a part of the room is occupied by these machines and absorbing materials are applied over the entire room, those workers who regularly occupy the portion away from the machines will receive the full benefit of the treatment because the spread of noise into their area is reduced; the effect will be a feeling that the noise is "pushed back" to where it belongs. The operators of the machines observe an immediate and pronounced drop-off in the noise in moving only a few steps from the edge of the machine area, and insofar as their duties permit they are, from time to time, afforded periods of relief which experience has shown to be very worthwhile.

While the use of a given factory area is subject to change now and then as to machines, equipment, and number of personnel occupying it, and while it is known that some types of operations receive greater benefits from sound conditioning than do others, evidence collected to date is ample to conclude that the factory building that is designed and built to contribute to the quick decay of noise will provide in general a far more comfortable working environment than the usual building, which by its very nature sustains and prolongs every noise generated within its walls.

The money value to any individual plant can be determined only in accordance with the method used by that plant in placing dollar values upon the comfort and well-being of its employees.

[3] Sabine, Paul E.: *The Problem of Industrial Noise*, American Journal of Public Health, 34:3. (March, 1944)

[4] National Safety Council: Safe Practices Pamphlet #50, *Practical Methods for Reducing Fatigue*

FIG. 1
Section of 2" iron pipe removed from hot water system of a New York City building less than 10 years old. Rust has almost filled the pipe.

CORROSION
AND PIPE SELECTION

By HENRY L. SHULDENER, President, Water Service Laboratories, N. Y.

The corrosion of water piping systems involves two major factors—the kind of water and the kind of pipe. A few years after the introduction of brass and copper as domestic water piping material, and before troubles with these materials had an opportunity to develop, it was generally believed that they supplied the solution to the corrosion problem in buildings. Now that weaknesses have developed, stock is again being taken of the situation and the question: "What kind of pipe should I use?" is again being asked.

Lending institutions, designing engineers, and architects are beginning to appreciate more fully the significance of water quality, as well as pipe quality, as a prime factor in the design of water distribution systems in apartment houses, hotels, hospitals, office buildings, and houses. It is now generally recognized that no metal is immune to corrosion and that the rate of corrosion for a given material depends principally upon the chemical characteristics of the water involved. There is, and has been, considerable difference of opinion with respect to the durability of the various pipe materials, but much of the conflicting testimony about the same kind of pipe in different locations is due, as stated, to the different composition and characteristics of the water supplies involved—a fact which has been completely overlooked too many times. Thus, it is not feasible to make general recommendations as to the best material to be used under all circumstances. Each individual case must be studied with particular reference to local experience and to composition of the water supply.

NATURE OF WATER

To appreciate the problem it is necessary to understand better the nature of water, a substance so commonplace that it is taken for granted. Simply stated, all municipal and private water supplies are extremely dilute water solutions of gases and mineral salts. The gases are atmospheric oxygen and carbon dioxide dissolved by rain in its fall through the atmosphere. The salts are mineral matter dissolved from the earth's crust by water flowing over and through it in the form of rivers, streams, or wells. These salts are predominantly bicarbonates, sulphates, and chlorides of calcium and magnesium which give water its "hardness." These are the minerals which destroy soap, that is, which make it difficult to raise a lather, and which form the whitish lime scale common in hot water tanks and boilers.

Since all the gases and minerals are in solution, unlike particles of sediment or vegetable matter, they cannot be removed by filtration, just as you cannot remove dissolved sugar from coffee by filtering it.

GASES CAUSE CORROSION

The few parts of dissolved atmospheric gases per million parts of water are the cause of widespread corrosive destruction of pipe in municipal distribution systems or in the piping system of a building, hotel, or private house. Such corrosion is primarily due to dissolved oxygen, aided and abetted by carbon dioxide. The extent and rate of corrosion is controlled by the chemical balance of the other constituents mentioned. Distinction should be made between oxygen dissolved from the air and oxygen which constitutes part of the compound we know as water, H_2O. The oxygen that forms part of the compound H_2O is chemically bound and inert. The amount of dissolved atmospheric oxygen in natural surface waters is about three to eight parts of oxygen per million parts of water, which is the limit of its solubility at usually prevailing temperatures.

The content of carbon dioxide, or carbonic acid gas, in most natural waters ranges from two to twenty-five parts per million. This gas directly affects acidity of water and has the effect of accelerating the rate of oxygen corrosion.

Expressed in non-technical language, the total gas content of natural waters is, roughly, several cubic centimeters of gas per gallon of water. The total content of various mineral salts dissolved in natural waters usually ranges from thirty to two hundred and forty parts per million parts of water. This is equivalent to approximately one-tenth of an aspirin tablet per glass of water. Sea water contains over two hundred times as much total dissolved matter.

While the total of these impurities is very small and represents the extremely dilute solution described, nevertheless the composition of "water" varies widely as regards the amounts of individual constituents. This fact has controlling influence on the potential corrosiveness of the dissolved gases, which are either inhibited or accelerated in their reaction with the metal of the pipe. When the characteristics of

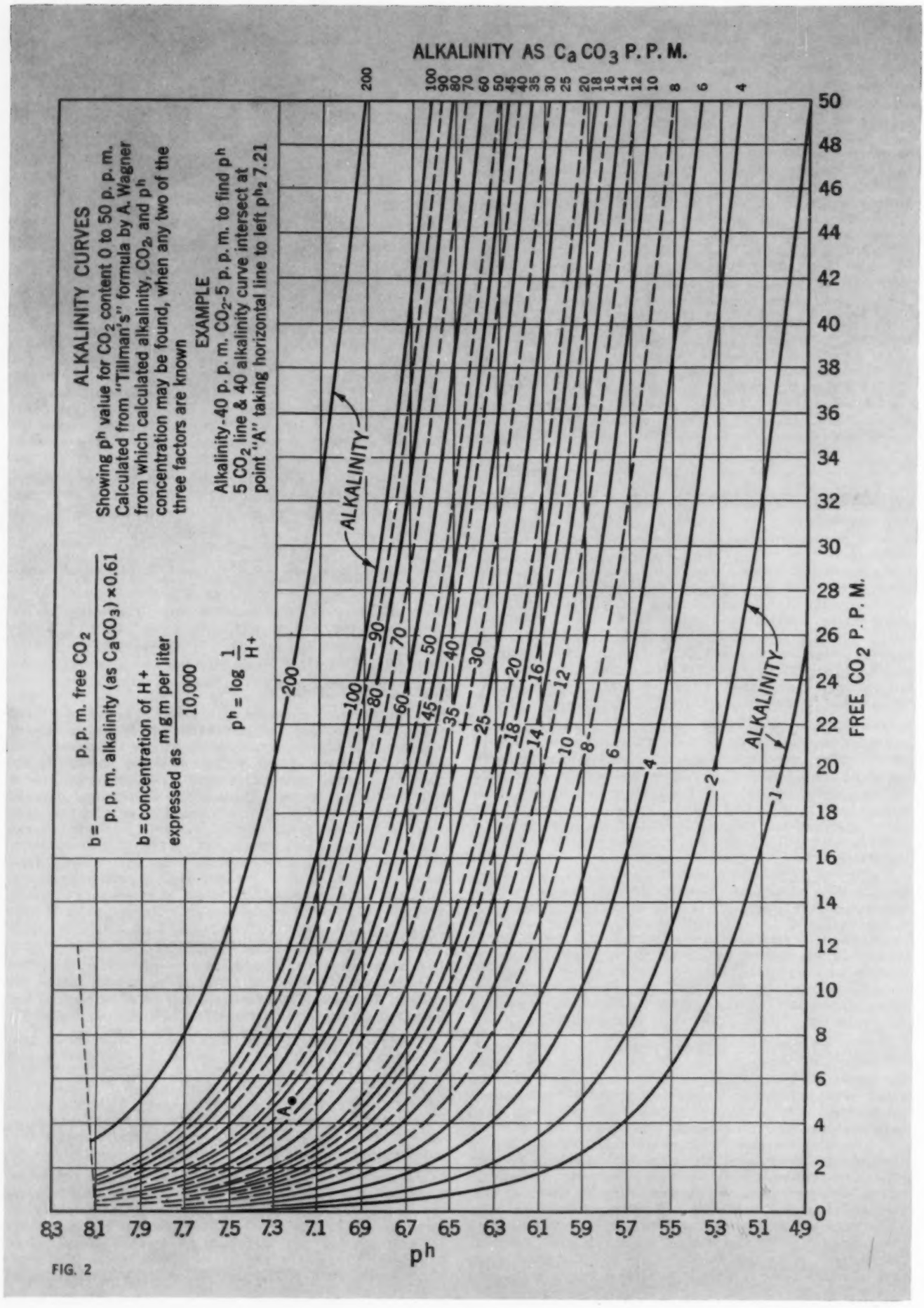

ALKALINITY AS $Ca CO_3$ P. P. M.
200
100
90
80
70
60
50
45
40
35
30
25
20
18
16
14
12
10
8
6
4
ALKALINITY CURVES
Showing p^h value for CO_2 content 0 to 50 p. p. m. Calculated from "Tillman's" formula by A. Wagner from which calculated alkalinity, CO_2, and p^h concentration may be found, when any two of the three factors are known
EXAMPLE
Alkalinity-40 p. p. m. CO_2-5 p. p. m. to find p^h 5 CO_2 line & 40 alkalinity curve intersect at point "A" taking horizontal line to left p^h 7.21
$b = \frac{\text{p. p. m. free } CO_2}{\text{p. p. m. alkalinity (as } CaCO_3) \times 0.61}$
b = concentration of H+ expressed as $\frac{\text{m g m per liter}}{10{,}000}$
$p^h = \log \frac{1}{H^+}$
ALKALINITY
A
FREE CO_2 P. P. M.
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
8.3
8.1
7.9
7.7
7.5
7.3
7.1
6.9
6.7
6.5
6.3
6.1
5.9
5.7
5.5
5.3
5.1
4.9
p^h

FIG. 2

a water are such as to inhibit oxygen reaction, the water is classed as non-corrosive.

CORROSION FACTORS

In evaluating the corrosiveness of a natural water, four factors are considered of prime importance, namely: **hardness, alkalinity, pH, and silica content.**

Hardness. Generally speaking, those waters containing relatively large amounts of hardness in the form of the alkaline salts, calcium and magnesium bicarbonates, are less corrosive than the so-called soft waters, which are comparatively free of these salts. The non-corrosive water supply usually deposits a calcium carbonate scale on the inside of pipes. It is this protective mineral coating which some municipal chemists deposit artificially in their city distribution mains. However, artificial deposits lack permanence under service conditions unless a definite composition of the water itself is maintained to stabilize the protective coating.

Alkalinity; pH. The ratio of dissolved carbon dioxide to total alkalinity of water is another important factor in the rate of corrosion. This ratio controls the water's acidity, or hydrogen ion concentration, and is known as the *pH* of the water. A water having five parts per million of carbon dioxide (expressed as CO_2) and ten parts per million of total alkalinity (expressed as $CaCO_3$) would have the same pH as a water having twenty parts per million of carbon dioxide and forty parts per million total alkalinity. Both waters have a carbon dioxide:alkalinity ratio of 1:2 and have the same pH, which happens to be 6.6 (see **Fig. 2**).

It is apparent that the corrosiveness of a water will increase with the addition of acid, such as carbonic acid, because the concentration of H ions will increase, which is the same as saying that the pH will be lowered. The pH of most natural waters generally lies within the range of pH 6.0 to 8.0.

Temperature. In addition to chemical factors affecting corrosion, temperature is the most important physical factor controlling the rate of reaction. It is considered that a rise in temperature of about 25 to 40 F will double the speed of reaction. Thus, while a particular water may be only mildly corrosive to the cold water piping of a building, it may be very corrosive to the hot water piping. The reason for frequent specification of less expensive pipe material in the cold water system, and more expensive, more corrosion-resistant, piping material in the hot water system of a building, becomes obvious.

EFFECTS ON DIFFERENT METALS

The various pipe materials in common use are steel, wrought iron, the several brass alloys, and copper.

The effect of corrosive waters upon **iron** piping, even when galvanized, is usually evidenced by loss of carrying capacity in the piping, which becomes clogged with rust (iron oxide) caused by the direct combination of iron and oxygen. Rust has about ten to fifteen times the volume of the iron of the pipe wall from which it was formed. Thus it is evident that iron pipe lines can become completely clogged by the rusting of only a small percentage of the pipe wall thickness. Another form of iron pipe failure results in leaks caused by local pitting, in which case the oxygen attack is confined to small areas. In addition, a common nuisance frequently arises when some of the very fine rust particles remain suspended in water, causing the familiar "red" or rusty water.

The effect of corrosive waters upon **brass** piping takes the form of dissolving the zinc from the copper-zinc alloy. This action is known as "dezincification;" it appears to be caused by combined action of oxygen and carbon dioxide in water. Typical examples of the two most common types of dezincification, the so-called "plug" and "layer" types, are shown in the accompanying photographs (**Figs. 3 and 4**). The net result of this action is the removal of the zinc, leaving a porous, brittle form of copper which eventually causes pipe failure. Leaks usually occur first at the root diameter of threaded joints, where the metal is thinnest. Moreover, the pipe breaks easily at such points when repairs are attempted.

FIG. 3
Section of yellow brass pipe showing copper plugs typical of plug dezincification.

Dezincification has been found to be confined to the so-called "**yellow**" brasses. Three brass alloys are commonly used: "low" brass, or Muntz metal (60% copper, 40% zinc); "high" brass (67% copper, 33% zinc); and "red" brass (85% copper, 15% zinc). The first two are called yellow brasses. In many localities these low copper-content alloys have proved disappointing as compared with previously used iron piping. In fact, many municipal authorities discourage the use of the yellow brasses, and in some instances have gone so far as actually to forbid their use.

Red brass and **copper** are considered the most generally resistant to corrosion. Their increasing use, following poor experiences with the yellow brasses, has indicated, however, that even these materials should be used with discretion. When a corrosive water acts on copper it may dissolve a sufficient amount to produce green staining of white plumbing fixtures and laundered articles. When soap or any other alkaline material is added, the water will turn blue. Indiscriminate choice of copper pipe or tubing without regard for the composition of the local water has produced many such complaints.

WATER TREATMENT

Many municipalities are chemically treating their water supplies in order to reduce corrosion. Briefly, chemical treatment involves changing the corrosive characteristics of the water by changing nature's original amount and ratio of dissolved mineral salts and gases. Addition of lime or soda ash to increase alkalinity and reduce carbon dioxide content, thus raising the pH, is the common method. However, many factors limit this practice, two of which are the cost of chemicals to treat an entire municipal supply and the effect of the changed water characteristics upon existing industrial processes and power plant operation.

Many owners of large commercial buildings and hotels engage chemical engineering assistance to adjust the mineral content of the municipal supply as it enters their properties, in order to check corrosion of piping. The principle is the same as the municipal method, except that more effective results can be obtained because, for individual building supplies, liquid sodium silicate is the alkali used as the basis for the treatment. Carbon dioxide is neutralized, alkalinity and pH of the water are raised, and in addition, a protective siliceous film is formed on the internal surfaces of the pipe. The nature of this film depends on the composition of both the water and the pipe. By thus conveniently inhibiting corrosion, less expensive pipe materials are given extended life and costly pipe repairs are reduced.

For example, during the past few years it has been necessary to utilize ferrous piping materials for water distribution systems in new building construction due to wartime restrictions on use of copper and brass. As a result, some serious problems have presented themselves in localities where the public water supply is corrosive. Rapid development of "red water" troubles, and even pipe failures due to pitting or clogging with rust, are characteristic of past experience in those localities (see **Fig. 1**).

FIG. 4

Typical layer dezincification, yellow brass pipe. Darker areas in the section are dezincified.

Typical was the experience of a large U. S. Public Health Hospital where black ferrous piping had been installed. A very distressing red water condition developed within six months after the buildings were opened; it became extremely difficult for the hospital to function because of the impossibility of keeping surgical instruments, laundry, and drinking water fit for use. This trouble was completely eliminated within a few weeks by corrective water treatment which reduced the corrosiveness of the water.

However, whether water treatment is applied, or whether the proper choice of pipe material for the available water supply has been made, there are important, fundamental considerations other than corrosion which directly affect the useful life of a piping system. These may be discussed under the headings of design, fabrication, and operation.

DESIGN

Many of the ills which develop in piping systems which must carry a corrosive water supply can be minimized, sometimes avoided entirely, by proper design. The following suggestions were all inspired by operating troubles which contributed materially to reduced useful life of the water distribution systems involved.

Hot Water Systems. Positive hot water circulation should be provided by means of thermostatically controlled circulation pumps in order to reduce temperature fluctuations, thereby minimizing the expansion and contraction strains which are a common cause of leaks at joints. Moreover, in a hot water system in which temperature fluctuation and the resulting expansion and contraction of piping are held to a minimum, the initial formation of scale or rust film will not flake off to provide fresh metal surfaces for corrosive attack. Good results with ferrous piping systems in many hotels, when provision has been made for maintenance of uniform temperatures twenty-four hours a day, stand out in marked contrast to the much shorter life of hot water systems in apartment houses in which water temperature fluctuates from high during the day to low at night.

Incidental advantages of good circulation and controlled temperatures are avoidance of complaints from tenants and of waste of water and heat, caused when tenants draw large quantities of luke-warm water in order to get hot water.

If a loop or overhead system (**Figs. 5 and 6**) of distribution is used, check valves should be provided on the horizontal part of each individual return line in order to prevent two-way flow. Two-way flow is objectionable because it causes quick temperature fluctuations with consequent strains at joints, causing leaks. Moreover, such reversal of flow is a common cause of rusty discoloration in iron systems.

Valves. When practicable, it would be well to use iron body valves with iron piping, instead of brass valves. This will minimize galvanic corrosion, which often takes place between the brass valve and the iron threads of the connecting iron nipple or pipe.

Gate valves are recommended rather than globe valves, because they offer considerably less resistance to flow; moreover, they do not accumulate sediment as readily as globe valves. The latter are traps for loose scale, dirt, or rust particles and have frequently developed into bottlenecks in the piping system, restricting flow so severely that extensive piping replacements have mistakenly been made when the mere removal of the globe bottleneck would have solved the problem. Also, the excessive turbulence caused by a globe valve appears to increase the rate of corrosion of attached piping.

The use of quick-closing valves should be avoided; they are the worst offenders in causing water hammer. Water hammer not only causes mechanical damage to piping systems, but increases the rate of corrosion by breaking the protective coating of scale that has formed on the inside of piping and tanks.

Storage Tanks. Hot water storage tanks should be provided with manholes to allow for proper cleaning. Storage tanks are natural catch basins for sediment contained in the water supply or originating in the circulating hot water system. This is so because the water's velocity decreases greatly while it is flowing through a hot water tank. If the tank is not drained and thoroughly flushed at least once a year, there is danger that a disturbance may carry a considerable amount of this sediment into the circulating system, where it will lodge in horizontal lines, valves, elbows, and reducing fittings, to cause troublesome bottlenecks and consequent flow reductions. Moreover, the accumulation of dirt, scale, and rust, if not removed, forms a sludge which causes rapid failure of the tank at the interface of the sludge and water line due to the difference of potential.

Risers. Dirt traps should be provided at the bottom of all vertical hot and cold water risers. This may be done conveniently by installing a cleanout tee, preferably with a draw-off valve (**Fig. 7**). Similarly, it is desirable to provide flush-out fittings at the ends of all horizontal lines.

Controls. Automatic controls should be provided for keeping hot water temperatures at approximately 140F, the life of the piping is very closely related to the temperature of the water it conveys. It is a recognized fact that at temperatures above 140F corrosion accelerates rapidly. Every operator and householder can do much to reduce corrosion losses simply by controlling temperature. In large buildings

FIGS. 5, 6, 7, and 8 show piping layouts for hot water systems designed to reduce corrosion.

HOT WATER SYSTEM

LOOP ARRANGEMENT WITH UP-FEED RISERS SUPPLYING THE BATHS AND DOWN-FEED RISERS SUPPLYING THE KITCHENS

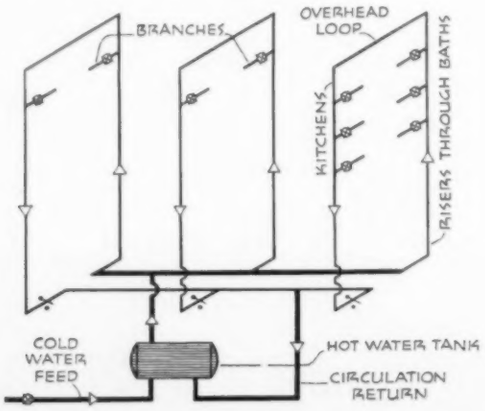


FIG. 5

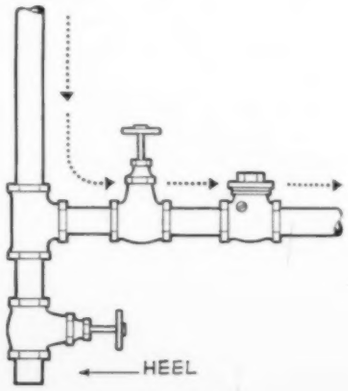


FIG. 6

a temperature recorder is very helpful in maintaining good control.

Pipe Sizes. Pipe should be ample in size to allow for frictional resistance, a particularly important point in the case of small iron pipes. Initial incrustation frequently renders such small pipes useless in a short time, whereas in a larger sized line it acts as helpful protection against further corrosion without materially reducing the pipe's capacity. It would be well to limit the minimum size of iron pipes in buildings to ¾" or 1" in diameter. The difference in cost between ½", ¾", and 1" pipe is so small that it ordinarily is economically unsound to use the smaller pipe. Also, small piping diameter means higher water velocities which, up to a critical velocity for each diameter, increase both the rate of corrosion and mechanical damage due to water hammer.

Particular attention should be paid to sizes of return lines in an overhead, or direct-feed, hot water system (**Figs. 6** and 8) because not much resistance is required to retard circulation, or even to stop it. Circulation is dependent on the fact that the hot water in the pipes continually loses heat. Therefore, water in the return risers is cooler than water in the up-feed risers, and has a slightly greater weight per unit of volume. This difference in weight creates circulation. For example, if water leaves the hot water tank at a temperature of 160 F and returns at a temperature of 100 F, and the building is six stories high, the pressure available to keep the water circulating is only ¼ lb per sq in. Therefore a small accumulation of corrosion products in undersized return lines soon renders the return system useless. For this reason the loop system has an advantage in that circulation is caused as tenants draw water from the return loop (**Fig. 5**).

FABRICATION

In fabrication, as in design, experience also dictates certain precautions which will result in longer pipe life. The following suggestions are simple but important.

Every effort should be made to ream the burrs caused in cutting pipe. Burrs provide a good, sharp, rake-like surface for catching sediment and cause high turbulence which induces excessive corrosion at the joint. Burrs are a frequent cause of bottlenecks, particularly in small pipes.

The use of bushings, street ells, and reducing fittings should be minimized as they, too, are causes of bottlenecks, because they provide shoulders against which deposits accumulate. Troubles caused by such fittings have been recognized by authorities who are studying the possibilities of improved design of pipe joints, fittings, and couplings, including the use of fewer fittings, in lieu of which pipe can be bent on the job by portable hydraulic pipe benders, thus increasing the efficiency of the entire piping system.

Pipe compound should be spread on pipe threads only, not on the thread of the fitting. If the latter is done, compound may be pushed into the fitting, where it frequently hardens and acts as a shoulder for further accumulations and the eventual formation of still another type of bottleneck.

OPERATION

Intelligent analysis of plumbing troubles will keep maintenance costs down and increase the over-all life of the piping system. For example, a common trouble, "poor flow" of water from faucets, is caused by deposits in the piping. Horizontal iron pipes, particularly branch lines from risers to taps, are usually the first to become clogged. The trouble can usually be located by comparing the flow from the same riser on different floors. For instance, if the flow from a certain faucet is poor, but there is good flow from the faucets on the floors directly above and below, it is evident that the flow in the riser is adequate but there is a stoppage in the branch line.

Such stoppages may be due to loose particles of scale, dirt, or rust which may have accumulated in the pipe at an elbow or reducing fitting, and often can be dislodged by the simple expedient of reversing the flow. This can be done by shutting off the hot water riser, connecting the cold water faucet to the hot water faucet at the basin or tub with a piece of rubber hose, and flushing out by opening another hot water faucet on the same riser. Flushing out through the bottom of the hot water riser is even more effective. Similarly, hot water pressure can be used to clear out the cold water branch. This procedure may work in relieving local stoppages, but will accomplish little when poor flow is due to general corrosion.

Hot water storage tanks should be cleaned annually at regular intervals, by flushing the sludge out with a stream of water from a hose. When tubercles and accumulations require mechanical removal, bristle brushes (not wire brushes) should be used because the hard adherent rust is excellent insulation against corrosion and should not be removed. After loosening all material with a bristle brush, the tank should be hosed out with a stream of water.

Hot water heating coils and tankless heaters should likewise be cleaned at regular intervals. The plumbing contractor usually does not provide proper connections for convenient flushing. It is important that they be installed, because poor heat transfer prompts the engineer to force the boilers to get hot water, thus causing a cycle of boiler problems.

Risers and distribution lines should be flushed annually. The longer this is neglected, the less effective will it be when eventually done, because the effectiveness of the flush depends upon the velocity of flow. In systems in which deposits have already accumulated, potential velocity is reduced due to increased resistance to flow.

The corrosive characteristics of the local water supply, and local experience with various kinds of piping, should be studied, and if necessary water treatment may be employed. Many of the suggestions reviewed under the headings of design and fabrication may be applied even after a building has been erected. The suggestions arise from experience gained in the inspection and study of approximately ten thousand buildings, in each of which some trouble had developed.

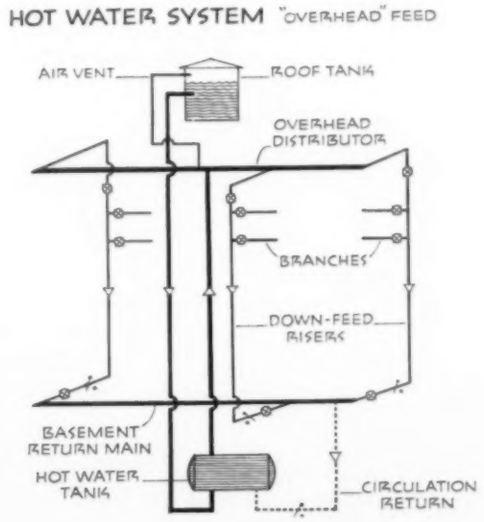


FIG. 7

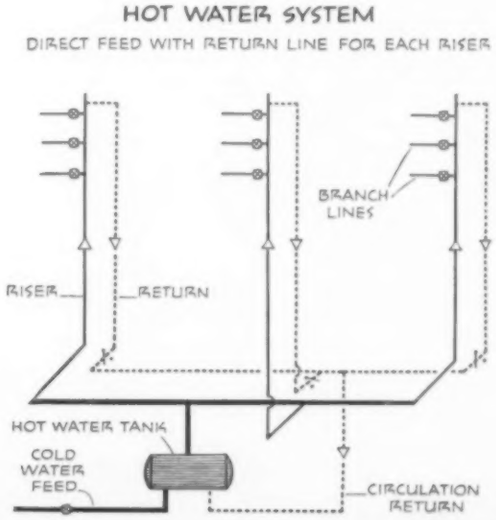


FIG. 8

MANUFACTURERS' LITERATURE

EDITORS' NOTE: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

Acoustics

1-45. *Burgess Acousti-Booth Scout Model No. 602*, Burgess-Manning Co. Reviewed May.

Adhesives

1-36. *Manual of Technical Data*, U. S. Plywood Corp., Industrial Adhesives Div. Reviewed May.

Air Treatment

1-43. *Electro-Matic Self-Cleaning Air Filter, Model E (Bulletin 250-E)*, American Air Filter Co., Inc. Reviewed May.

1-46. *Filtered Air (Form 501)*, American Air Filter Co., Inc. Reviewed May.

1-47. *Roto-Clone (Dust Control) (Form 270)*, American Air Filter Co., Inc. Reviewed May.

1-48. *Steam-Jet Air Ejectors (RP-284)*, 10 pp. Data sheet from *Power* on multi-stage ejectors, and reprint of an article by Philip Freneau on fundamentals of air removal equipment. Worthington Pump & Machinery Corp.

Communications Systems

3-60. *Executone Inter-Communication for the Home*, Executone, Inc. Reviewed May.

9-48. *Talk-A-Phone Presents Complete Inter-Communication Systems (Cat. 1944)*, Talk-A-Phone Mfg. Co. Reviewed May.

Concrete, Air Entraining

3-58. *Manual for Using Darex AEA*, Dewey and Almy Chemical Co. Reviewed May.

Corrosion Resistance

3-63. *Corrosion-Resistant Materials and Equipment (Bulletin E)*, U. S. Stoneware Co. Reviewed May.

Design, Plant

4-49. *Looking Ahead with the Bottling Industry*, 24-p. booklet (10½x13½). Presenting 8 layouts and renderings of basic arrangements of equipment for bottling plants. The firm states: "We are not undertaking to offer an architectural service . . . We are concerned, however, with the installation of our equipment to best advantage and to make it work for you most profitably." Crown Cork & Seal Co., Machinery Div.

Design, Store

4-50. *Setting the Scene for Selling*, 34-p. booklet (11x14) pointing up importance of cooperation between merchandiser and architect in planning sales displays—floor covering displays in particular. Floor plans, photos, drawings, recommendations. Lees-Cochrane Co., Inc.

Drafting Room Equipment

4-46. *More Useful from Any Angle (triangles)*, Charles Bruning Co. Reviewed May.

4-48. *Protect and Preserve with Bruning Dulseal*, Charles Bruning Co. Reviewed May.

4-52. *Kodak Transfax Process*, illus. folder on method of reproducing (white-line positive) drawings on metal, plastics, and other flat surfaces by means of a light-sensitive surface spray. Eastman Kodak Co.

4-53. *The Solarmeter Solves Them—Instantly*, 8-p. illus. folder (3¾x7¼) on features of a device for measuring sun azimuth and declination, for use in determining building orientation. R. W. Justice.

Engineering Equipment

5-30. *Gurley Engineering Instruments (Bulletin 50)*, 90-p. illus. condensed catalog (6x9) and price list on: transits, engineers' levels, topographic instruments, hydraulic measuring instruments (current meters) water level recorders, field supplies. W. & L. E. Gurley.

Floors, Concrete

6-65. *Concrete Floors with Lone Star Cements*, 14-p. illus. booklet recommending construction practices for normal and heavy-duty concrete floors; test data. Lone Star Cement Corp.

Floor Finishes

H. H. Robertson Company; reviewed May:

6-63. *Hubbellite (T-1-45).*

6-64. *How to Prepare Sub-Floors for Hubbellite Floor Surfacing (T-4-44).*

Gypsum Products

7-50. *The Four Protections of Modern Home Building (X-26)*, 48-p. handbook (5½x8½) illustrating various wall and ceiling assemblies, with brief paragraphs on gypsum products used in each; protection ratings against fire, vapor, heat, cold, noise. U. S. Gypsum Co.

7-46. *Pyrobar Gypsum Short Span Roof Tile*, U. S. Gypsum Co. Reviewed May.

7-47. *Gyplap Measures Up (sheathing)*, U. S. Gypsum Co. Reviewed May.

7-48. *"Quiet, Please" with Auditone (SC-53-Rev.) (acoustical tile)*, U. S. Gypsum Co. Reviewed May.

Hardware

8-102. *Hardware for Commercial Entrances (Cat. K570)*, 36 pp., illus. Catalog of hardware designs for store doors: bars, butts, checks, closers, handles, hinges, kickplates, locks, thresholds, etc. P. & F. Corbin.

8-91. *Corbin Locking Devices and Special Hardware for Metal Application Specification Products (Cat. K396, 7th ed., revised)*, P. & F. Corbin. Reviewed May.

8-88. *Hardware for Sound-Deadening Doors (K-335)*, P. & F. Corbin. Reviewed May.

Heating and Heating Equipment

8-92. *Standard Electric-Welded Steel Boilers (Bulletin S-67), AIA File 30C-1*, Brownell Co. Reviewed May.

8-83. *A Step Ahead in Hospital Heating (Bulletin 633), AIA File 30-C23*, C. A. Dunham Co. Reviewed May.

8-85. *Series 15 Unit Heater, AIA-30-D11 (Cat. 15C-2)*, Fedders Mfg. Co., Inc., Industrial Heating Div. Reviewed May.

8-100. *SK Radiafin Tubes (11sa)*, 4-p. bulletin on fin-wound steel pipe for increased heat radiation in steam or hot water systems. Correction and application tables; dimensions and area. Schutte & Koerting Co.

8-101. *Sarcotherm Manual*, 35 pp., on a system of controls and hook-ups for existing hot water and radiant heating systems. A painstaking and not-too-technical explanation of the system's functions, various parts, capacities, controls, etc. Wiring diagrams, detail drawings. Sarcotherm Controls, Inc.

Hospital Equipment

8-93. *Capital Cubicles Turn Hospital Wards Into Private Rooms*, Capital Cubicle Co. Reviewed May.

Lighting and Lighting Equipment

From General Electric Co., Lamp Dept., reviewed May:

12-63. *Flexible Lighting to Step Up Furniture and Appliance Displays (Y-548).*

12-59. *G-E Slimline and Circline Lamps Seen in Many Roles (LM-20).*

12-64. *Let There Be Light (data on light for reading purposes).*

12-65. *Light for Tomorrow's Food Store.*

12-66. *Slimline Diameters and Lengths Presage Expansion of the Lighting Art.*

12-69. *Commercial Fluorescent Luminaires (Cat. 285)*, 16-p. illus. catalog of new fluorescent luminaires for use in offices, stores, schools, public buildings. Mounting and servicing information. Mitchell Manufacturing Co.

12-70. *Essential Data on Sylvania Fluorescent Lamps*, 2-p. list from technical section of *Sylvania Lighting News, Vol. 5, No. 6:* lamp wattage, length, bulb, and base sizes; amps, volts, rated life cycles, lumens, foot-lamberts—for 4 types of fluorescent lamps. Sylvania Electric Products, Inc.

Load Transportation

12-72. *Material-Handling Equipment*, 56-p. "guide for analysis of material-handling operations and application of power industrial trucks"; sections on material-handling management; organizing an industrial-truck handling system; practical truck engineering. Background information for architects, engineers. Electric Industrial Truck Association.

Metal, Ornamental

13-34. *Pan American Bronze*, 4-p. illus. folder on types of bronze memorial tablets, signs, nameplates, mausoleum equipment, etc. Pan American Bronze Co.

MANUFACTURERS' LITERATURE

PROGRESSIVE ARCHITECTURE—Pencil Points, 330 West 42nd Street, New York 18, N. Y.
I should like a copy of each piece of Manufacturers' Literature listed.

We request students to send their inquiries directly to the manufacturers.

No.	No.	No.	No.
No.	No.	No.	No.
No.	No.	No.	No.
No.	No.	No.	No.

NAME

POSITION

FIRM

MAILING ADDRESS ☐ HOME ☐ BUSINESS

CITY STATE

6/46

PLEASE PRINT

Paint

16-81. *Texolite Color Selector*, U. S. Gypsum Co. Reviewed May.

Photomurals

16-92. *Chosen by America's Four New Streamliners*, Kaufmann & Fabry Co. Reviewed May.

16-93. *No Priorities on Smartness or Increased Business*, Kaufmann & Fabry Co. Reviewed May.

Piping Equipment

16-83. *How to Cash in on the Silver Alloy Ring*, Air Reduction Sales Co. Reviewed May.

16-84. *Functional Spring Hangers and Vibration Eliminators (Cat. 2026)*, Blaw-Knox Co., Power Piping Div. Reviewed May.

16-102. *Wrought Iron for Underground Services*, 36-p. illus. bulletin. Technical engineering information on factors affecting soil corrosion; case records on underground pipe lines. A. M. Byers Co.

16-87. *Orangeburg Fibre Conduit (Cat. 49)*, Fibre Conduit Co. Reviewed May.

16-94. *Orangeburg Pipe (Cat. 304)*, Fibre Conduit Co. Reviewed May.

Plastics

16-88. *Selecting the Right Thermosetting Molding Materials*, Bakelite Corp. Reviewed May.

16-103. *Plastics Primer*, 8-p. illus. booklet "presenting briefly and simply facts about the phenolic plastics." Table of phenolic molding compounds. Durez Plastics & Chemicals, Inc.

16-78. *Cellulosic Thermoplastics (Form 500-29-A)*, Hercules Powder Co., Cellulose Products Dept. Reviewed May.

16-96. *Why Cellulose Plastics? (Form 500-19)*, Hercules Powder Co., Cellulose Products Dept. Reviewed May.

Plumbing Equipment

16-104. *American-Standard Catalogue.* 56 new and revised (postwar) pages for plumbing goods section of American-Standard catalog (in effect Dec. 20, 1945). Mainly on bathtubs, sinks, sink cabinets, fittings. American Radiator & Standard Sanitary Corp.

16-95. *Recipe for Hot Water*, Edison General Electric (Hotpoint). Reviewed May.

16-105. *Model 50 Self-Sustaining Hinge, AIA File 29-H-22*, 2-p. illus. folder on plastic toilet seats with hinge device to prevent slamming. Sperzel Co.

Prefabrication

16-107. *Prefabricated Insulated Steel and Aluminum Portable Housing Units*, folder and illustration sheets on portable, prefabricated housing units, from 1-room house to 18-bed dormitory; general specifications. The Steelcraft Mfg. Co.

Pump Equipment

16-91. *Worthington Vertical Turbine Pumps (Bulletin H-450-B33)*, Worthington Pump and Machinery Corp., Pump Div. Reviewed May.

Roofing

18-32. *An Abesto Specification Means A Successful Roof*, illus. folder which, while directed toward dealer consumption, contains cold process specifications and instructions for applying built-up "Abesto" pitch roofing. Abesto Manufacturing Co.

Stage Design

19-54. *So You Are Going to Build A Stage*, J. H. Clancy, Inc. Reviewed May.

Steel

Quick-reference data "Blue Sheets" on stainless steel—physical properties, corrosion and oxidation resistance, elevated temperature effects, heat-treating procedures and results; Allegheny Ludlum Steel Corporation:

19-57. *Allegheny Metal 12 EZ, Type 416, A Free Machining Chromium Stainless Steel.*

19-58. *Allegheny Metal 18-8C and 18-8T, Types 347 and 321.*

19-59. *Ludlum 609, Shock Resisting Steel.*

19-60. *Allegheny Metal Castings, Stainless Steel.*

19-55. *Laclede Steel Joists, AIA-13G*, Laclede Steel Co. Reviewed May.

Tile, Asphalt

20-23. *Recommended Specifications for the Installation and Maintenance of Asphalt Tile, AIA File 23-D*, 4-p. folder. Data on asphalt tile for use of architects, engineers, Government bureaus, etc. Asphalt Tile Institute.

Trims

20-24. *The Importance of Mouldings in Modern Design*, 38-p. booklet. Catalog of metal mouldings, illustrating each type and size. Herron-Zimmers Moulding Co.

20-25. *Stainless Steel Mouldings*, 18-p. booklet on various types of mouldings; sizes; prices. Herron-Zimmers Moulding Co.

Wall Coverings

Illustrated technical data sheets on a stainproof, cloth- or paper-backed wall covering. Varlon, Inc.:

22-63. *No. 1. Description, Specifications, Tests.*

22-64. *No. 2. Special Tests.*

22-65. *No. 3. Special Tests.*

22-66. *No. 4. Independent Technical Report.*

Wall Ties

23-67. *Lasting Strength for Cavity Wall Construction (Pub. 100)*, 4-p. illus. folder on an alloy-steel and copper wall tie of 2-ton breaking strength. Detail drawings; specifications. Copperweld Steel Co.

Water Softeners

23-69. *Soft-Water*, 8-p. illus. folder on an automatic manifold filter-softener unit, and other water conditioning equipment. Elgin Softener Corp.

Weather Instruments

23-70. *Gurley Wind Velocity and Wind Direction Instruments (Bulletin 6000)*, 16-p. illus. bulletin on: electronic and DC (wind-powered) anemometers, AC and DC wind direction instruments, recorders, combination outfits. W. & L. E. Gurley.

Windows

23-71. *Awning Type Windows, Jalousies, Jalousie Doors*, illus. folder on pre-assembled, mechanically operable, wood sash and shutters (toxic-treated); detail drawings. Gate City Sash & Door Co.

Wood Preservatives

23-72. *Abesto Staintox Wood Preserver, Abesto Cleartox Wood Preserver*, 1-p. data sheet on 2 deep-penetrating, oil-based wood preservers. Includes application methods. Abesto Manufacturing Corp.

. . . THERE **MUST** BE A REASON!

Intelligence (or do we kid ourselves?) from the materials front: The National Association of Home Builders has petitioned the Federal government to do something, quick, about scarce building materials, with a scarcely concealed urge that the "something" be to raise ceiling prices so there'd be more incentive to make more of the scarce items. Their action boils down to an earnest wish to join manufacturers in making money, an ambition with which only a fool would quarrel. Of course Wyatt was their target, along with the proposals for subsidies for building materials manufacture. Simply stated this part of Wyatt's program was based on a decision that, if building costs remained at their current high level—or rose—veterans' housing would be far out of line with veterans' pocketbooks. Now that Congress has at last implemented the program by passing a compromise bill including the subsidy provisions, we expect housing to arrive, presto! Of course it won't; but Wyatt is committed at least to stick pins in the building "industry."

There seems to be a growing wonder whether any practical amount of conventional structural materials and house equipment will be more than a drop in the bucket. It would not surprise us to find that unconventional materials were to be pushed into house-builders' hands. Of such materials, those which can be fabricated in customary ways by customary building trades should be comparatively easy to get across.

As for specific and familiar items: Considerable construction lumber was actually exported from the U.S.A. during early 1946, under licenses granted before announcement of the Veterans' Housing Program. Since then controls have been greatly tightened; licenses are now given only when necessary to maintain international commitments, or to assure increased imports. U. S. Gypsum has announced its new, asphalted-gypsum sheathing board, water-proof and weather-proof, as a replacement for wood sheathing . . . Referring again to "sandwich" materials, a speaker at the recent Society of the Plastics Industry Conference listed a dozen or more suitable core materials. . . Cast-iron radiation, short in supply, has a newly revised Simplified Practice Recommendation in the works at the National Bureau of Standards. Principal change is a stock assembly schedule for small-tube radiators containing 60 standard assemblies which are estimated to satisfy 90% of the total demand.

THIS MONTH'S PRODUCTS

AFFIXING MEANS

Nailock Steel Nailing Channels. Steel channels for easy, strong installation of any nailable material over steel, concrete, and masonry; can be set in concrete or attached to steel by clips, wiring, or spot welding. Special nails (supplied with channels) bend and hook around channel rod. Sanymetal Products Co., Inc., 1705 Urbana Road, Cleveland 12, Ohio.

BRIDGING

Self-adjusting Cross-bridge. Cambered steel shaft, with double head-points and curved cutting edge on heel. Adjusts to variables of joist-sag and rebound; head and heel ends automatically set and react to throw approximately 450-lb stress into struts. G. E. Eichenlaub, 2519 Broadway, Beaumont, Tex.

CONTROLS

Zurn Remote Valve Control. Device with flexible cable transmits torque to valve handle; for controlling valves in places difficult to reach. J. A. Zurn Mfg. Co., 1801 Pittsburgh Ave., Erie, Pa.

DOORS

Aetna Steel Door Frame. One-piece welded door frame with welded hinges, fits ordinary wall types, takes standard size wood doors; strike plate cutout will take any size strike. Aetna Steel Products Corp., 50 Church St., New York, N. Y.

HARDWARE

Corbinlok. Aluminum night latch with single knob operation for bolt positions; cream or brown color. P. & F. Corbin, New Britain, Conn.

HEATING EQUIPMENT

Whirl-O-Matic. Prefab fuel-oil furnace unit, in 36" x 42" x 22" cabinet, available in 3 capacities, produces both steam or hot-water heat, and hot water (eliminating need for boiler); requires only piping connections; adaptable to old or new systems. Persiro Mfg. Corp., 38 Keer Ave., Newark 8, N. J.

Heatsum Cable. Synthetic insulation cable (⅛" diam.) in unit lengths and heating capacities, 120-240 volts, for radiant (panel) heating. May be buried in standard plaster coat, built into cement or similar alkaline materials, incorporated into prefab panels, etc. L. N. Roberson Co., 1539 E. 103rd St., Seattle 55, Wash.

INSULATION

Ferro-Therm Steel Insulation. Thin, light steel sheets for use as reflective insulation above crawl spaces—nailing strips or fiber board unnecessary. American Flange & Manufacturing Co., Inc., Ferro-Therm Div., 30 Rockefeller Plaza, New York 20, N. Y.

LIGHTING EQUIPMENT

Curtis 40-60 Luminaire. Fluorescent fixture with aluminum reflectors, louvers, canopy, for use in schools, offices, labs, etc. Approximately 40% light directed upward, 60% downward; no horizontal surfaces. Curtis Lighting, Inc., 6135 W. 65th St., Chicago 38, Ill.

Guth Hy-Liter. Fluorescent lighting fixture for intense spot or flood lighting effects in displays. 90° downward arc adjustment. Concentric louvers; aluminum flutings; surface or recessed lighting. Edwin F. Guth Co., 2615 Washington Ave., St. Louis 3, Mo.

Lampholder. 3-piece plastic unit for fluorescent circline lamps; has 2 spring-loaded tension supports. General Electric Co., 1285 Boston Ave., Bridgeport 2, Conn.

Fluorescent Fixtures. Gorham (R-220) contains two 20-watt lamps; Sheffield (R-420) contains four 20-watt lamps—ceiling fixtures for homes. Unshielded white reflectors; aluminum end caps. Sylvania Electric Products Co., Inc., Salem, Mass.

Star Luminaire. Luminous indirect fixture for "over-all" lighting of offices, schoolrooms, etc. 40-watt fluorescent lamps; Plaskon reflectors, end caps. F. W. Wakefield Brass Co., Vermilion, Ohio.

PAINT

Chromatone. Ready-mixed silver chrome finish paint; contains a darkening-preventive stabilizer; rust- and heat-resistant; high protective qualities; increased reflectivity. Alumatone Corp., 1523 Grande Vista, Los Angeles 23, Calif.

PIPE FITTINGS

Flexigrip Tubing Fitting. Brass, aluminum, or steel unit (body, gripping ring, gasket, nut) for leakproof sealing in refrigeration, air conditioning, hydraulic, oil systems. ⅛" to 1½" O.D. Gustin-Bacon Mfg. Co., Kansas City, Mo.

PROTECTIVE COATINGS

Plaster Grip. Primer and sealer for plaster walls. Can be applied over wet plaster or old paint; can be painted over in 48 hours. Gillespie Varnish Co., Dey and Howell Streets, Jersey City 6, N. J.

Acid-causticbond. Plasticized resin coating for preventing acid and alkali corrosion; may be brush-applied. Wilbur & Williams Co., Park Square Bldg., Boston 16, Mass.

SCREENING

Velon Screening. Green-tinted, plastic, opaque filament for screens; weatherproof elastic. Firestone Tire & Rubber Co., Akron, Ohio.

SHEATHING

U.S.G. Sheathing. Fireproof sheathing with asphalted-gypsum core; low water-absorption and good bracing strength; can be cut and fitted to studs. United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.

SIDING

Insulite Siding. Siding with ½" "Graylite" insulating board base for exterior use; comes in red, white, and gray blends. Minnesota and Ontario Paper Co., 500 Baker Arcade Bldg., Minneapolis 2, Minn.

Roddiscraft

doors in Michigan Maple

A combination of Beauty and Toughness

HARD Michigan Maple faces over RODDISCRAFT cores and crossbanding welded into a solid, waterproof unit, under heat and pressure, by the RODDISCRAFT process, creates a door that will stand up under heavy traffic and harsh treatment.

In contrast to the delicate color and warmth of Michigan Maple, is its ingrained hardness — resistance to chipping and scuffing — which makes it an ideal wood for facing doors used in public buildings.

Roddis offers the pick of Michigan Maple from its 30,000-acre northern Michigan tract — selected and cut by Roddis woodsmen — matched and finished by Roddis craftsmen.

Specify RODDISCRAFT Doors in Michigan Maple to get long life and lasting beauty. Available in selected white, or unselected for painting. Consult your local millwork and fixture manufacturers — and lumber dealers.

Roddiscraft

Roddis Lumber & Veneer Co.

MARSHFIELD, WISCONSIN

Roddiscraft WAREHOUSES

CAMBRIDGE 36, MASS., 229 Vassar St.
CHICAGO 8, ILL., 1440 W. Cermak Rd.
CINCINNATI 2, OHIO, 457 E. Sixth St.
DALLAS, TEXAS, 2615 Latimer St.
KANSAS CITY 8, MISSOURI, 2729 Southwest Blvd.
LOUISVILLE 10, KENTUCKY, 1201-5 S. 15th St.
LONG ISLAND CITY, N. Y., Review and Greenpoint Ave.
MARSHFIELD, WISCONSIN
MILWAUKEE 8, WIS., 4601 W. State St.
NEW YORK CITY 18, NEW YORK, 515 W. 36th St.
SAN ANTONIO, TEXAS, 727 N. Cherry St.

DEALERS IN ALL PRINCIPAL CITIES

Consult Your Local Millwork and Fixture Manufacturers — and Lumber Dealers

When you plan a playroom...

When the guests have gathered and the games are on, nobody likes to hike upstairs to answer the telephone or make a call. Naturally, the alert architect realizes this and plans for a telephone outlet in the playroom as well as in other convenient locations.

Built-in conduit to carry telephone wires within the walls, with telephone outlets at all handy locations, are a mark of good planning and sensible construction. Prospects will expect these features — in small homes as well as large ones. The cost is small for the extra convenience and room beauty.

Your Bell Telephone Company will be glad to help you plan for them. Just call your Telephone Business Office.

Room planned by George Daub, Philadelphia, Architect

BELL TELEPHONE SYSTEM

Suggest the new way of living

with large windows of *Thermopane*

REG U.S. PAT. OFF.

Most people love the outdoors—its feeling of freedom and bigness and airiness. So, the trend to larger windows—to bring these benefits indoors—is natural.

But, of course, people like comfort, too. How to provide both was a problem, until *Thermopane* was developed.

Thermopane is a transparent insulating unit composed of two or more panes of glass separated by sealed-in dehydrated air. It provides year-round insulation. The L·O·F Bondermetic Seal bonds the panes into a single unit to guard against dirt or moisture entering the air space. And the sealed-in air greatly reduces the possibility of condensation on the glass.

Manufacturers of both wood and metal windows make sash for *Thermopane.* For special sash, specify rabbeting wide enough to accommodate *Thermopane's* slightly greater thickness.

For more data on insulation values, sizes, thicknesses and types of glass than can be given here, write for a copy of our factual *Thermopane* book. Libbey·Owens·Ford Glass Company, 2566 Nicholas Bldg., Toledo 3, Ohio.

Architect George Fred Keck combined in*sol*ation with insulation in this house. The roof extension bars hot summer sun, lets in the warm slanting rays of winter sun.

L O F **LIBBEY·OWENS·FORD**
a Great Name in **GLASS**

CUTAWAY VIEW OF THERMOPANE

REVIEWS

WHAT "THEY" WANT

How to Choose, Plan and Build Your Own Home. Helen Koues. Tudor Publishing Co., 221 Fourth Ave., New York, N. Y., 1946. 128 pp., illus. $1.25

The assortment of house plans, pictures, and patter offered under this all-inclusive and imposing title is of little weight and of small value to the architect. The impression is that the author, who was formerly connected with one of the popular home magazines, gave her unedited files to the printer, and this unfortunate book is the result.

An extraordinary amount of tangential thought, fuzzy expression, and nonparsing sentences characterize the text. In the foreword the author refers to the houses and their plans as "in traditional, contemporary, and modern architecture. Each style contributes to the splendid renaissance of building which is taking place in this country."

The only importance of this book lies in the measure of its damaging effect on an artistically malnourished public. Over half of the book extols traditional architectural styles. Magazines and books of this type are in large measure responsible for the low artistic taste of the American public. The author refers to a recent survey in which only four percent of the persons interviewed preferred modern architecture for their new homes, and another five percent preferred modified modern. Too many editors and authors purvey what they think the reader wants as determined by such surveys or from samples taken of public taste. They make no serious attempt to familiarize the public with the basic principles of sound design or to show the irrefutable logic of good contemporary architecture.

Their influence is dissipating the present opportunity of this country to produce vital, honest residential architecture on a breathtaking scale.

LAWRENCE E. MAWN

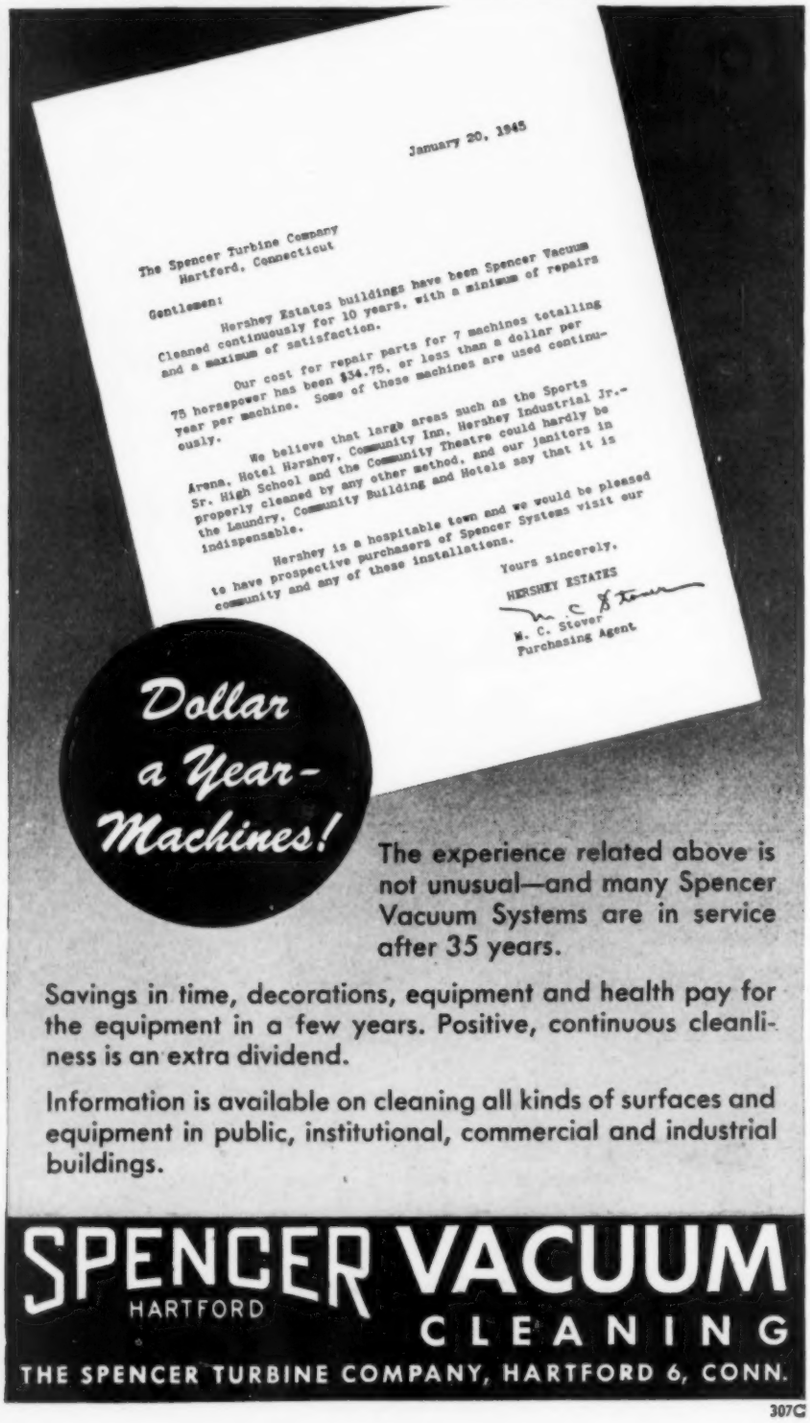
ENGINEERS WERE BEST

Builders of the Bridge. The Story of John Roebling and his Son. D. B. Steinman. Harcourt, Brace & Co., Inc., 383 Madison Ave., New York, N. Y., 1945. 457 pp. $3.50

During the last century of the Great Eclecticism, engineers had a corner on good design; the lasting achievements (as at the European fairs) during the 19th century were the work, primarily, of engineers. Architects, meanwhile, built grandiose structures which are best ignored or forgotten. Few of these were as much a part of the tradition leading to good contemporary architecture as were the Hall of Machines, the Crystal Palace, or the great bridges and railroad stations of that century. These construction jobs may have been so immense and challenging that furbelows had to be mere afterthoughts. Perhaps because designer and builder were often one, good sense and honesty came easily.

Suspension bridges particularly were blessed with a minimum of architectural adornment. This was not for economy (they were often cheaper for the span than other bridge types) nor was it because the engineers were untutored in good taste. It seems, rather, to have been the happy effect of a functional point of view and the general appreciation of their beauty. Natural symmetry enlivened by sweeping diagonals and masterful spanning of great space by an apparent minimum of effort were inspiring elements for the public's eye. Several so-called esthetic adaptations of suspension bridges to their sites were

(Continued on page 110)


January 20, 1945
The Spencer Turbine Company
Hartford, Connecticut
Gentlemen:
Hershey Estates buildings have been Spencer Vacuum Cleaned continuously for 10 years, with a minimum of repairs and a maximum of satisfaction.
Our cost for repair parts for 7 machines totalling 75 horsepower has been $34.75, or less than a dollar per year per machine. Some of these machines are used continuously.
We believe that large areas such as the Sports Arena, Hotel Hershey, Community Inn, Hershey Industrial Jr.-Sr. High School and the Community Theatre could hardly be properly cleaned by any other method, and our janitors in the Laundry, Community Building and Hotels say that it is indispensable.
Hershey is a hospitable town and we would be pleased to have prospective purchasers of Spencer Systems visit our community and any of these installations.
Yours sincerely,
HERSHEY ESTATES
M. C. Stover
Purchasing Agent
Dollar a Year-Machines!
The experience related above is not unusual—and many Spencer Vacuum Systems are in service after 35 years.
Savings in time, decorations, equipment and health pay for the equipment in a few years. Positive, continuous cleanliness is an extra dividend.
Information is available on cleaning all kinds of surfaces and equipment in public, institutional, commercial and industrial buildings.
SPENCER HARTFORD VACUUM CLEANING
THE SPENCER TURBINE COMPANY, HARTFORD 6, CONN.
307C

Between the Seasons

Spring and Fall have many chilly days and evenings, too, that need just a little *Extra Heat*. That's when the FA Electric QUIKHETER proves its worth in delightful warmth . . . filling an average room in just a few minutes.

Best of all, the FA QUIKHETER has no moving parts to wear out, and a genuine Nichrome element that should *never* burn out under normal operating conditions. Built into the wall it takes no floor space and eliminates the hazards of exposed cords.

It costs no more than many portable models, yet lasts a lifetime. Separate control switch* locates high on the wall, away from children's inquisitive fingers, where you can reach it without stooping.

The FA QUIKHETER is an *auxiliary* electric heater providing *extra* warmth for the morning shower, baby's bath, drying hair, and chilly mornings before the regular heating system is started.

BUILT-IN

ELECTRIC

FA QUIKHETER

Frank Adam Electric Co.

BOX 357
ST. LOUIS
MISSOURI

REVIEWS

(Continued from page 108)

attempted but the results were unhappy. Generally they were kept clean of the atrocious refuse heaped upon arched bridges from Washington to Bombay.

Steinman, in *Builders of the Bridge*, tells the exciting story of John Roebling's struggle to prove that successful suspension bridges could be built. This is a story with high-minded heroes—Roebling and his son, Washington—and low villains—rival and inferior bridge builders, sceptical financiers and politicians, the still juvenile engineering science of their day, and natural catastrophes. These opponents could never stop the work of the Roeblings; even Washington's crippling during the building of the Brooklyn Bridge was merely an episode. Constant success makes their personalities seem somewhat dull and improbable, their habits ascetic; but they aimed at immortality and achieved it.

Although engrossing fiction might require the hero to be overcome temporarily, Steinman's story shows that the Roeblings always had command of the situation. With thoroughness and system they planned ahead and then reaped the benefits. John Roebling, engineer trained in Germany, his homeland, led a group of fellow townspeople to a farming settlement near the site of Pittsburgh. He was unsuited to a rural life and soon became associated with nearby projects, biding his time for an opportunity to build a suspension bridge. His first major work was in the construction of overland elevators to transport canal boats over mountains; the iron wire and cable which he developed to improve this operation helped create the Roebling Cable Company near Trenton. These iron and, later, steel cables woven under his supervision became basic ingredients for the creation of Roebling's successful bridges.

Washington and his brothers grew up in a home at Trenton, which was lonely even though it was near the factory. Their father was away on projects and their mother seems never to have been a companion. Their meagre correspondence with John was formal and usually related to their duties at home, at school, or in the cable factory. Steinman described, excellently, the easy adaptation Washington made of his engineering and character training during the Civil War in the Union Army. He returned, a major, soon to join his father on bridge jobs, the greatest of which was that at Brooklyn; during this long project John died and Washington was permanently crippled.

The personal biography is incidental in Steinman's story of these bridge builders. It is their construction which forms the core of this book. As an engineer the author understands the technical achievements of the Roeblings and happily is able to present them for the layman. The exciting and ingenious schemes, later systematized, which were used to solve the innumerable problems of bridge building serve to dramatize and explain suspension construction.

A suspension bridge is so obviously a man-made addition to the landscape and so obviously post-Hellenic, post-Gothic, and post-potpourri that its esthetic value can be grasped best when it is most nude. Although the Roeblings proposed a more strongly Gothic character for the Brooklyn Bridge than it finally possessed and had previously built steel towers graced by contemporary lacery, their eminently good sense of design is apparent throughout this double biography. They were able to perceive the beauty of their spans without worrying over decorative motifs. As they worked they simplified.

There is more honest emotion in a bridge at some historic site which is simply a bridge than in one strewn with stone garlands and academically contrived bas reliefs of past events. When, for example, economy and good sense prevented the encasement in masonry of the George Washington Bridge towers, the esthetic improvement lead to the present style of delicate towers.

John Roebling was more than a designer; his contracts called for com-

(Continued on page 112)

BARBER-COLMAN

28 SHOP
MARSHALL FIELD & COMPANY
CHICAGO

Marshall Field & Company, famous Chicago store, designed their 28 Shop as a luxury setting for the sale of the best lines of women's apparel. For maximum patron comfort they included a good air conditioning system with Venturi-Flo ceiling outlets (seen on the overhead circular light soffit) for uniform draftless air distribution. Favorable comment of many customers is fair testimony of the success of this installation.
Photo Hedrich-Blessing Studio.

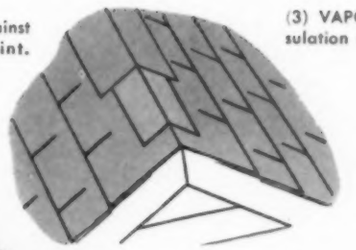
venturi-flo
CEILING OUTLETS FOR GUARANTEED AIR DISTRIBUTION

Data based on complete tests enable us to recommend exactly the right outlet for any condition and GUARANTEE results. You are assured of uniform, properly diffused air of the desired temperature at specified level, with required air movement and elimination of hot, cold, or drafty areas. Use ENGINEERED AIR DISTRIBUTION — see your Barber-Colman representative.

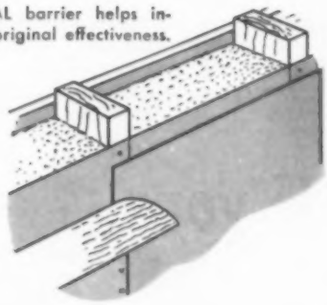
BARBER-COLMAN COMPANY
1230 ROCK STREET • ROCKFORD, ILLINOIS

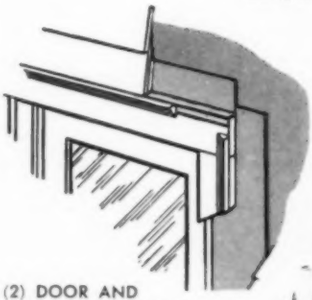
Vulnerable Points Damp-proofed with ANACONDA "Electro-Sheet"

(1) ROOF RIDGE sealed against danger of leakage at joint.

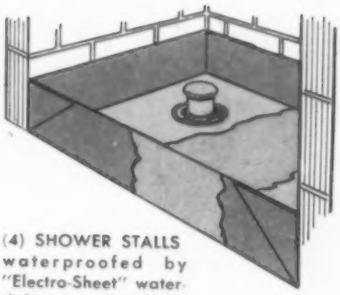


(3) VAPOR SEAL barrier helps insulation retain original effectiveness.



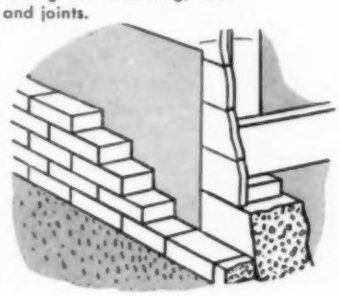


(2) DOOR AND WINDOW OPENINGS protected against air infiltration and moisture penetration.

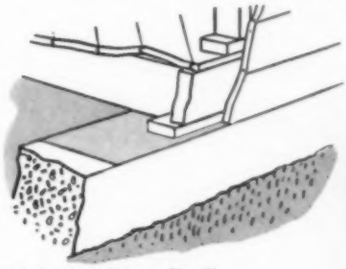


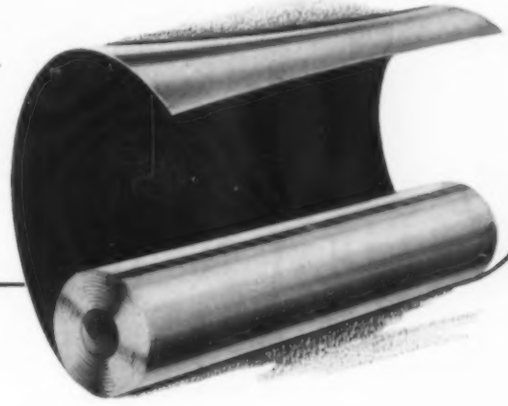
(4) SHOWER STALLS waterproofed by "Electro-Sheet" watertight pan, folded at corners.

(5) DAMP-COURSE BEHIND VENEER prevents rotting of sheathing, sills and joints.



(6) FOUNDATION DAMP-COURSE keeps moisture away from sills and joists.





Illustrations (1) (2) (5) (6) courtesy The Sisalkraft Co., Inc., Chicago. No. (3) Angier Corp., Framingham, Mass. No. (4) Mitchell-Rand Mfg. Co., New York.

ANACONDA "Electro-Sheet" Copper is thin sheet copper formed by electro-deposition. It is furnished in long, continuous lengths to several manufacturers, where it is either bonded with high grade building papers or coated with an asphaltic compound.

In addition to the applications illustrated, there are many other places where Anaconda "Electro-Sheet" can be used to provide economical, lasting protection against driving rain, snow and other forms of moisture. 6061

ANACONDA
from mine to consumer

Anaconda
COPPER

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

REVIEWS

(Continued from page 110)

pleted structures. The improvements which he incorporated in successive bridges undoubtedly stemmed, in part, from this close contact with construction. His inventions and structural details made his bridges possible; all parts were affected—towers, anchorages, cables, and the span itself. The stiffness which he achieved (and which dumbfounded his belittlers) was the product of these improvements based upon practical experience and expert analysis. A later generation of engineers, consciously striving for an esthetic ideal—streamlining—ignored some of Roebling's dicta.

The excitement of construction is the real plot of this biography; rarely has an engineer better stated the attitude toward design and construction which leads to immortal books.

DAVIDSON-SMULL

THREE ITALIAN STUDIES

Document, Portfolios of Composition and Technics in Architecture. (Text in Italian.) Antonio Cassi Ramelli, Editor. Antonio Vallardi, Via Stelvio 22, Milan, Italy.

The three folios which we have viewed, *Houses*, *Doors*, and *Transportation Buildings*, are part of an ambitious program of documents relating not only to building types but to specific building parts. For this series to attain the value of the comparable Swiss series published by Werner, would require several changes despite Vallardi's inclusion of work from many countries. The selections should be brought up-to-date, better photographs and much better drawings should be used, and an English, French, or German text should be provided. The poor designs—there are many—should be weeded out, especially the shoddy modernistic apartment houses in *Houses*. There remains an open field in this type of publication for an American or British publisher.

DAVIDSON-SMULL

If your PLANS include
any of
THESE
School, college and industrial laboratories.
Kitchens of hotels, restaurants and institutions.
Photographic studies and zinc engraving plants.
Battery stations . . . wherever acid wastes are encountered.
Soda fountains . . . where carbonated water is used.
Cinder fills . . . where corrosion is outside the pipe.

Specify
PIPE THAT IGNORES CORROSIVES

If the drain lines in your building are going to carry or be exposed to corrosives, you can have permanent, full life insurance against costly replacements by specifying Duriron.

Because of its complete indifference to corrosive agents, Duriron lasts indefinitely. Duriron pipe will give permanent safe passage to practically any acid or alkali.

Complete details of this corrosion-proof, no-maintenance material are given in Bulletin 702-D. Write for your copy. DC-8

THE DURIRON COMPANY, INC.
DAYTON 1, OHIO

DURIRON
ACID PROOF
DRAIN PIPE

ARCHITECTURE IN PICTURES

Egypt. George Steindorff. Photographs, Hoyningen-Huene. Second revised edition. J. J. Augustin, Inc., 125 E. 23 St., New York, N. Y., 1945. 172 pp. $10.00

Hellas, A Tribute to Classical Greece. Edited by George Davis, George Hoyningen-Huene, and Hugh Chisholm. Photographs, Hoyningen-Huene. Third edition. J. J. Augustin, Inc., 125 E. 23 St., New York, N. Y., 1945. 143 pp. $10.00

Roman Towns. Text and Photographs by Ernest Nash. J. J. Augustin, Inc., 125 E. 23 St., New York, N. Y., 1944. 201 pp. $6.00

Stones of Glory-Stones of France, A Pictorial sequence of French Architectural Monuments. Text and Photographs by Alexander Frenkley, with a letter by Jacques Maritain. International University Press, Inc., 227 W. 13 St., New York, N. Y., 1944. 140 pp. $6.00

The saddest sights in architectural history books are the pictures. The long and often inspiring word picture of the Acropolis, the Forum, or a cathedral created by the text, is negated, too often, by a dull and poorly composed print. Save for his faith in what the author declares, and his realization of what will be expected from him on examinations, the student—and most who have not taken the grand tour—is likely to consider the text so much poppycock. Here, at last, are three books which prove that the camera can capture architectural greatness; here too is a book which misses most of its chances. *Egypt*, *Hellas*, and *Roman Towns* are books which present ancient ruins as works of art. The pictures are accomplishments themselves. *Stones of Glory*, however, rarely rises above the level of the famous Boston print series.

J. J. Augustin, publishers of elegant books, have outdone themselves in the first three books. The photographs are composed to reflect the setting of the ruins on their sites and to emphasize the play of sunlight upon them. The

(Continued on page 114)

Assurance

A FINISHED PRODUCT reflects the degree of assurance with which the original planning was undertaken. Proper tools help to provide this assurance . . . drawing pencils for example, that assure accuracy of detail, perfect rendering and reproduction.

VENUS Drawing Pencils are engineered to give you drafting perfection without failure: accurately *graded* to assure uniformity in all 17 degrees . . . *strong* in performance . . . *smooth* and *clean* in action.

VENUS *DRAWING PENCILS*

AMERICAN LEAD PENCIL COMPANY, HOBOKEN, NEW JERSEY

REVIEWS

(Continued from page 112)

three-dimensional sense is strongly enhanced, although thankfully, no people (Arab guides or Roman beggars) are included "for scale." The effect is sometimes melodramatic, as in the case of structures which would have had a different character when filled with people, and a few sentimentally sticky shots are present, possibly to create the proper sense of nostalgia.

Egypt, a large octavo volume, covers the ruins of the Nile Valley up to the Persian conquest. Its brief text by Steindorff recounts the history of the ancient empire. *Hellas*, equally large, does not have a text in the strictest sense; the pictures are accompanied by quotations and poems on the glory that was Greece. *Stones of Glory*, a smaller book, prefaces its pictures with an adolescent essay on the incomparability of France. *Stones of Glory* tries to make up in quantity what it lacks otherwise; too frequently, three incomplete pictures are used to present a cathedral better grasped by one well composed print. Alone, the pictures in these books would have been quite enough; if text were necessary it might have been similar to that in *Roman Towns*. Here the text is both historical and descriptive so that the structures shown (and shown beautifully) are fixed in time as well as space. Too much emoting can weaken the dramatic effects of even the best photographs.

The three Augustin books are an encouraging start toward creating a collection of good pictures of ancient architecture. These should become classics in the library of architectural history.

DAVIDSON-SMULL

VOCATIONAL GUIDANCE

Planning Jobs and Jobs in Planning. Otto H. Ehrlich. Vocational and Professional Monograph No. 54. Bell Publishing Co., 6 Park St., Boston 8, Mass., 1945. 40 pp. $1.00

Town and Country Planning. Careers for Boys No. 134. The Career Advisory Bureau, 61 Conduit St., London W.C.1, England, 1944. 7 pp. 1s.

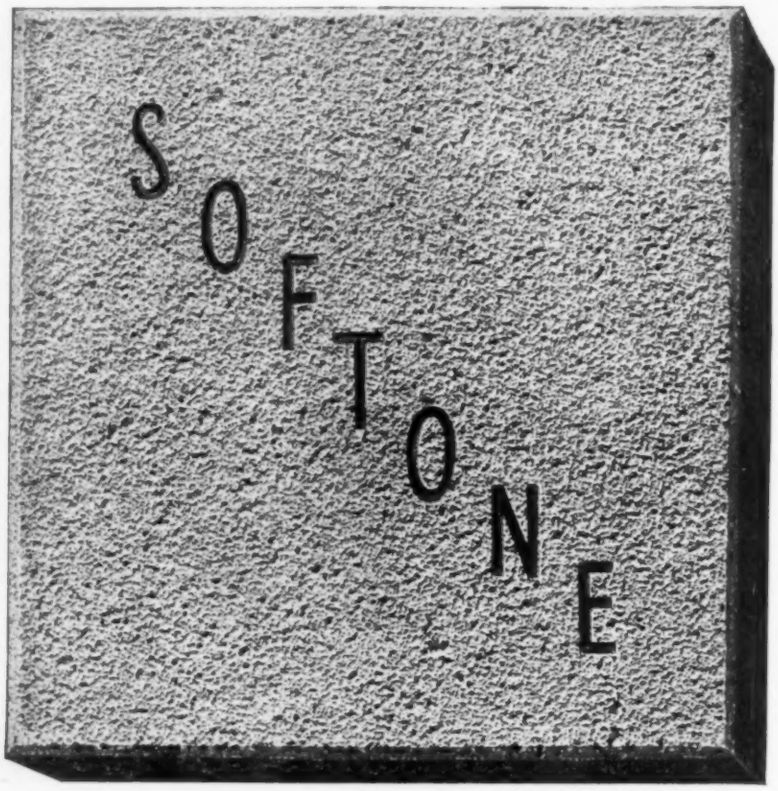
The concurrent release on either side of the Atlantic of vocational guidance monographs on planning jobs may be an indication that, after all, there is such a profession. Although neither monograph is particularly well done, together they provide an interesting comparison of British and American conceptions of the planning field.

England has the more formal profession; it is older and under the aegis of the Town Planning Institute (T.P.I.). This group has a series of standard examinations and certificates; it selects planning personnel from the technical studies of architecture, engineering, and surveying. But the profession has made enough progress in Britain for this monograph to be a "Careers for Boys" series.

American training, though not as standardized, is broader in scope. Here, planning is emerging as the teamwork of a series of correlated specialists, of whom the physical planner is but one. Arthur Comey, in his review of Lewis Lorwin's *Time for Planning (Journal of the American Institute of Planners*, October-November, 1945. p. 35) states this difference in his explanation that Lorwin "demonstrates beyond any doubt that the word 'planning' embraces, if it does not center in, economic and social planning. In view of the vigorous affirmation by a recent meeting of the American Institute of Planners that its field centers in physical planning (for economic and social objectives of course) a perusal of Dr. Lorwin's book makes more evident than ever that our present name is misleading."

The distinction between the physical planning of both the A.I.P. and the T.P.I. and the broader planning actually done publicly and privately in both countries must be heeded. Neither monograph gives a true survey of present employment possibilities in planning. The British study suffers from the stress on technical skills; the American, by its patent copying of civil service announcements.

DAVIDSON-SMULL



Minimizes

FIRE HAZARDS

SOFTONE Acoustical Tile has 3 outstanding features that account for its mounting popularity. 1. It is non-combustible, thus reducing fire risks. 2. It is unmatched for beauty in installation. 3. It is ideal for absorbing extraneous sounds, thus preserving quiet.

Ask for Descriptive Literature

SOFTONE*

Manufactured by

AMERICAN ACOUSTICS, INC.

120 S. LaSalle Street Chicago 3, Illinois

* (Trade Mark Reg. U.S. Pat. Off.)

. . . To this building we added SAFETY! with Alundum Aggregate NON-SLIP FLOORS

IN Rockefeller Center utility was combined with attractiveness when the terrazzo floors were made permanently non-slip, wet or dry, by the use of Alundum Aggregate. Architects of the finest structures are using Alundum Aggregate to add permanent safety to the other features which make terrazzo popular — attractive appearance, durability and economy. Incorporated in the surface of a terrazzo floor in the proper proportion Alundum Aggregate assures non-slip effectiveness that is not lessened by liquids nor by wear.

Also available: Alundum Aggregate for cement floors, Alundum floor and stair tile, Alundum Ceramic Mosaic Tile.

NORTON COMPANY WORCESTER 6, MASS.

ALUNDUM — Trade-mark Reg. U. S. Pat. Off.

GUIDE TO PUBLISHED WORK

Prepared by CHARLOTTE ZAGER

COMMERCIAL

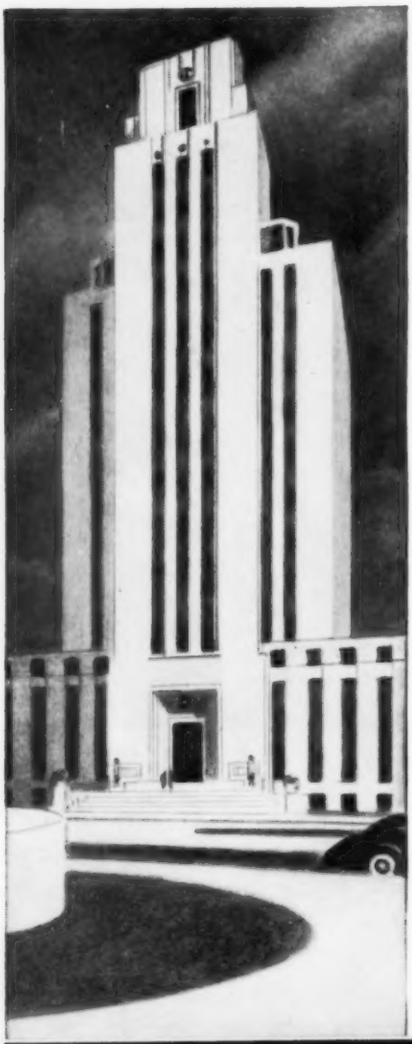
Banks.

Bank of Montreal, Toronto, Ontario, Canada—CHAPMAN, OXLEY, & FACEY; MARANI & MORRIS, ARCHITECTS. Construction of this bank building is to be resumed after an interruption of the six war years. Rendering and floor plan. (Mar. Journal of the R.A.I.C., p. 64)

Shopping Centers.

College Park Shopping Center, Inc., Maryland—BERLA & ABEL, ARCHITECTS. A sloping lot is exploited to yield a theater, offices, and extra parking in this project. Renderings, section, site and floor plans. (Mar. The Architectural Forum, p. 137)

Improve Architectural Concrete with CALCIUM CHLORIDE CURING



The addition of calcium chloride provides three great improvements over plain concrete. First, calcium chloride adds plasticity which permits use of stiffer mixes giving a denser and more durable finished concrete. Second, it provides high early strength so that forms may be quickly removed for repeated use. Third, calcium chloride supplies automatic "built-in" curing which reduces cracking and crazing.

Explanation of these features is given in Bulletin 28, "Calcium Chloride in Concreting," sent on request.

CALCIUM CHLORIDE ASSOCIATION

4145 Penobscot Bldg., Detroit 26, Mich.

Quality Concrete . . . with

CALCIUM CHLORIDE *in the mix*

Office Buildings.

"Insurance Building at Zurich"—GEBRUDER PFISTER, ARCHITECT. Of reinforced concrete with concrete floors, the heating of this Swiss Life Insurance Company building is entirely within the floor, the system advocated by Frank Lloyd Wright. Photos and floor plans. (Mar. The Architectural Review, p. 86)

Offices.

Offices and Showroom for Empire Bloomer Co., New York—JOSE A. FERNANDEZ, ARCHITECT. Photos and floor plan. (Apr. Architectural Record, p. 100)

Offices and Showroom for Mem Company, New York—HANS WEISS, WILLIAM BASSER, DESIGNERS. Dual personality is given to the selling of cosmetics for men and women in this office-showroom. Photos and floor plan. (Apr. Architectural Record, p. 102)

"Airline Office With a Lift"—MARCEL BREUER AND HUGH STUBBINS, JR., ARCHITECTS ASSOCIATED. Striking and immediate appeal found in this small ticket office for the Eastern Airlines, Boston. Photos and floor plan. (Apr. Architectural Record, p. 104)

EDUCATION

Colleges.

"College Dormitories—What Do the Colleges Really Want?"—HUGH STUBBINS, JR. Article dealing with the problems facing an architect in the design of college dorms today, particularly the question of harmonization of the new with the existent structures. Photos. (Apr. Architectural Record, p. 107)

"Factors in Dormitory Planning"—The confusing mixture of construction costs, the profit motive, and sheer sentiment usually guide the final selection made by the college building committee. Photos and floor plans. (Apr. Architectural Record, p. 109)

"Pleasant Living in College"—GARDNER DAILEY, ARCHITECT. Modern sorority house at Berkeley, Calif., better illustrating the tastes of the younger generation than college-built residences might. Photos. (Apr. Architectural Record, p. 110)

"Typical Dormitory Arrangement"—JENS FREDERICK LARSON, ARCHITECT. Typical dorm plan illustrated at Colby College, arranged basically to enable one kitchen to serve two dining rooms. Critical analysis of existing room plans and proposed improvements given. Photos and floor plans. (Apr. Architectural Record, p. 112)

"Dormitory Maintenance, by Style and by Common Sense"—LEWIS S. BEACH, MANAGER OF THE DIVISION OF MAINTENANCE AND CONSTRUCTION, YALE UNIVERSITY. Do's and dont's for dormitory architects, from the standpoint of maintenance of the Gothic and Colonial "styles," and of different materials used. Summary of maintenance cost indexes. (Apr. Architectural Record, p. 122)

Smith College Dormitory Competition—Report of the results of the competition conducted by the Museum of Modern Art and Progressive Architecture for the design of a dorm group of three fireproof units to be constructed by the college in the near future. Prize-winning designs shown. Renderings, floor and plot plans, elevations. (Apr. Progressive Architecture, p. 52)

Schools.

"First Postwar Schools"—ERNEST J. KUMP CO., ARCHITECTS. The White Oak School, San Carlos, and the Sunnybrae School, Calif., represent several "firsts" in designs planned by this firm

(Continued on page 118)

Chrysler Airtemp

"Packaged"
Air Conditioner

"Portrait" of a Star Shoe Salesman

"He's" a diligent worker, this super salesman . . . "he" brings in more customers . . . gives them comfortable satisfaction every minute they're in the store . . . encourages them to stay longer and buy more . . . leaves them with pleasant memories and a desire to return. Architects know him well—in fact, "he" frequently gets his star selling jobs through architects' recommendations. They know "him" as the Chrysler Airtemp "Packaged" Air Conditioner.

This simplified form of air conditioning, pioneered by Chrysler Airtemp, is ideal for stores of all types. "Packaged" Air Conditioners, with the famous sealed compressor, are engineered for long, dependable life. They are compact and easily moved, an advantage when remodeling or changing locations. Operating and upkeep costs are exceptionally low.

"Packaged" Air Conditioners gently circulate cool, filtered and dehumidified air quietly and efficiently. Add a heating coil, and you have year 'round air conditioning.

Also of first importance to architects is the small amount of floor space occupied by "Packaged" Air Conditioners and the fact that, singly or in multiple, they are easy to install. For full particulars, write Airtemp Division of Chrysler Corporation, Dayton 1, Ohio; or, in Canada, Therm-O-Rite Products, Ltd., Toronto, Ontario.

CHRYSLER AIRTEMP

HEATING • COOLING • REFRIGERATION

When You Want a shipment to go the fastest way, the word "rush" is not enough. Specify "Air Express" and be sure.

Phone For Pick-Up as soon as package is ready. Special delivery at other end often means same-day delivery between many airport towns and cities as far as 1,000 miles apart.

Air Express goes everywhere. In addition to 375 airport towns and cities, it goes by rapid air-rail schedules to 23,000 other communities in this country. Service direct by air to and from scores of foreign countries in the world's best planes, giving the world's best service.

RATES CUT 22% SINCE 1943 (U. S. A.)					
AIR MILES	2 lbs.	5 lbs.	25 lbs.	40 lbs.	Over 40 lbs. Cents per lb.
149	$1.00	$1.00	$1.00	$1.23	3.07c
349	1.02	1.18	2.30	3.68	9.21c
549	1.07	1.42	3.84	6.14	15.35c
1049	1.17	1.98	7.68	12.28	30.70c
2349	1.45	3.53	17.65	28.24	70.61c
Over 2350	1.47	3.68	18.42	29.47	73.68c
INTERNATIONAL RATES ALSO REDUCED					

Write Today for the Time and Rate Schedule on Air Express. It contains illuminating facts to help you solve many a shipping problem. Air Express Division, Railway Express Agency, 230 Park Avenue, New York 17, N. Y. Or ask for it at any Airline or Railway Express office.

AIR EXPRESS

GETS THERE FIRST

Phone AIR EXPRESS DIVISION, RAILWAY EXPRESS AGENCY
Representing the AIRLINES of the United States

GUIDE

(Continued from page 116)

the use of the square classroom, 30 ft. deep; the use of outdoor classrooms with structural shelters and benches; the use of radiant heating by copper piping in floor slabs. Photos, floor and plot plans, elevations. (Mar. Acrhitectural Record, p. 100)

"First Studies for a Model School in New York"—LORIMER RICH AND ROBBINS CONN, ARCHITECTS. Oswego State Teachers' College Practice School, Oswego, N. Y., a model school to serve as a laboratory for practice teaching and new experimental teaching methods, as well as the background for noting and evaluating the effect of the most advanced structural features. Renderings, floor plans, and elevations. (Mar. Architectural Record, p. 108)

"Average Size Done With Special Care"—JOSEPH N. HETTEL, AND MAYER & WHITTLESEY, ASSOCIATED ARCHITECTS. Bellmawr Grade School, N. J., a war-built school. Photos, site and floor plans, construction detail. (Mar. Architectural Record, p. 111)

"A Radical Departure in Daylighting"—MAYNARD LYNDON, ARCHITECT. Saugus Union School, Calif. An overhead skylight used to make possible a 30 foot-wide room with a perfect flood of illumination in this typical California pattern of square classrooms conjoined to outdoor classrooms, and set in parallel rows. Photos, renderings, floor plans. (Mar. Architectural Record, p. 120)

"School Transformation for the Northeast"—KAELBER AND WAASDORP, WHEELER AND WILL, ASSOCIATED ARCHITECTS. The architects have sought primarily for the advantages of a square classroom, typical of California, in this up-state New York school project, where there is the least abundant sunlight during the school year rather than the most. Ample auxiliary artificial lighting has been planned. Diagrammatic sketches, perspectives, floor and plot plans. (Apr. Architectural Record, p. 72)

The New Croydon Kindergarten, Croydon, Sydney, Australia—LOUIS P. BURNS, ARCHITECT. Photos. (Feb. 25, Building and Engineering, p. 24)

"Ministry of Works Standard Hutting for Schools"—Report of the R.I.B.A. Committee on School Design and Construction criticizing a recent proposal of the Ministry to use M.O.W. standard huts for the additional school accommodations required by the raising of the compulsory school age in England. (Feb. Journal of the R.I.B.A., p. 131)

Rural School, Vergennes, Vermont—FREEMAN, FRENCH, FREEMAN, ARCHITECTS. One-story combination grammar and high school with separate wings for the two age groups, and a direct-access auditorium. Rendering, floor and site plans. (Mar. The Architectural Forum, p. 140)

"Simplicity of Construction With Cinder Block"—JOHN SCHULZ, DIRECTOR OF BUILDING PLANNING, DETROIT BOARD OF EDUCATION. Mr. Schulz discusses Detroit's solution to today's problem of scarcity of materials and excessive costs in building their schools. Photos. (Apr. The Nation's Schools, p. 26)

"Junior High School . . . Carefully Designed"—WARREN S. HOLMES CO., ARCHITECTS. New junior high school planned for Lansing, Mich. Renderings and floor plans. (Apr. The Nation's Schools, p. 28)

ENTERTAINMENT

Radio and Television Studios.

Broadcasting House, Oslo—NILS HOLTER, DESIGNER. An H-shaped building faced with white marble, the home of the Norwegian State Broadcasting Co. contains 15 studios. The largest of these is a detached concert hall constructed of concrete without windows, roofed in a sweeping curve of copper sheeting, which covers the top and sides of the narrow bay linking the studio to the main block as well. Photos and floor plans. (The Architects' Journal for Mar. 21, p. 236)

Art Gallery.

Everyday Art Gallery, Walker Art Center, Minneapolis, Minn.—HILDA REISS AND WILLIAM FRIEDMAN, DESIGNERS. A new kind of art gallery designed to help the consumer obtain

(Continued on page 120)

FOR INSIDE AND OUT YOU CAN SPECIFY...

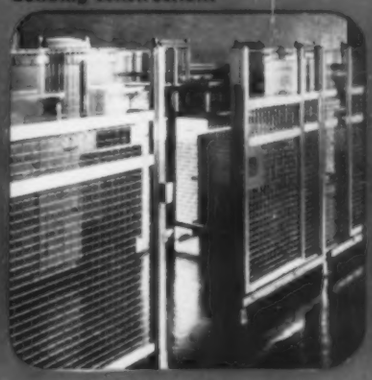
Alcoa Aluminum

One of the outstanding advantages of Alcoa Aluminum as a building material is the fact that it is not limited to either inside or outside use. You can gain by using it for both interior *and* exterior applications.

Where you need structural strength and light weight—specify aluminum. If you need a material with weather resistant quality—Alcoa Aluminum has it. It can't rust—can't rot—can't warp. And for decorative purposes, Alcoa Aluminum has almost limitless applications.

Yes, inside and outside, you'll build better with Alcoa Aluminum. Be sure you include this versatile building material in the plans on which you are now working. ALUMINUM COMPANY OF AMERICA, 2198 Gulf Building, Pittsburgh 19, Pennsylvania.

Faced entirely of Alcoa Aluminum sheet this building is tangible evidence of the trend to aluminum for building construction.



Where protection and appearance go hand in hand, as in these bank grilles, it's a job for aluminum.

Here is structural strength combined with lightweight - - a job for which Alcoa Aluminum is ideally fitted.

Utility and beauty are combined in aluminum guardrails. With little maintenance, these will keep their attractive appearance for years

Aluminum skylights provide excellent weather resistant qualities and reduce maintenance. They can't rust - - can't rot.

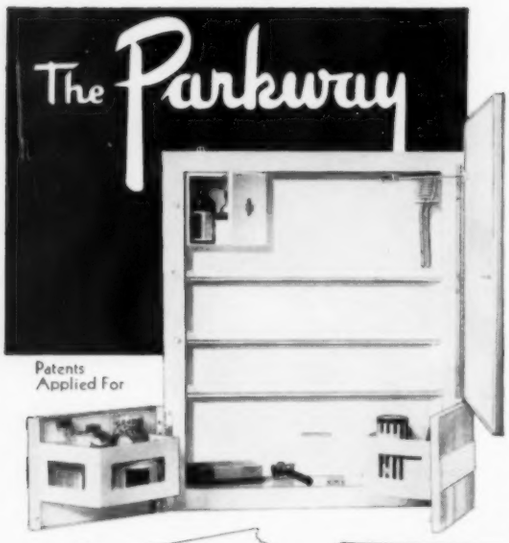
THE MOST VERSATILE OF ALL BUILDING MATERIALS

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM

A Smart Line to Suit Every Taste and Purse

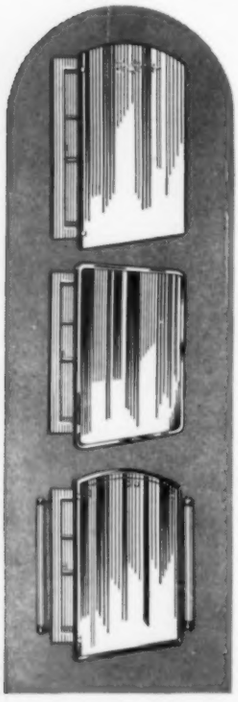
Bathroom Cabinets



Specify Faries Cabinets in the new homes you design or build this year, and be sure of customer satisfaction. Their sparkling beauty, modern design and unusual new special features appeal to all prospective home-owners.

The PARKWAY has more new and exclusive features than any other cabinet. There are two Personal Compartments for everyday needs; a "Safe-T" Compartment at top for poison drugs and adult items; Utility Shelf; Adjustable Tooth Brush Holder inside cabinet; Razor Blade Disposal; adjustable glass shelves; piano hinges; No. 1 Polished Plate Mirror.

COMING... A complete new line of chrome bathroom accessories.



No. 1 For the budget buyer. Beautiful mirror and finish. High quality.

Heavy plate mirror. Incandescent light. Beautifully trimmed. **No. 80**

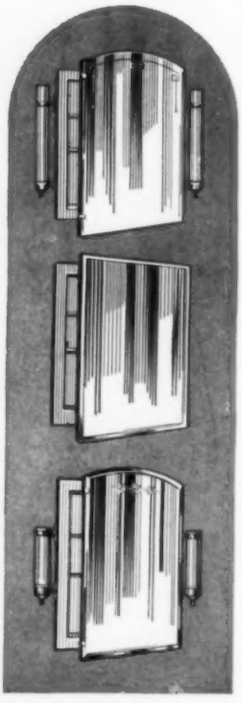
No. 2 Moderately priced, well-made, long life mirror.

Heavy plate mirror. Chrome metal bound. Durable finish. **No. 30**

No. 380 New fluorescent lights. Ready to install. Heavy plate mirror.

Popular priced yet has many features of higher priced models. **No. 8**

All cabinets white baked-enamel finish, chrome trimmed.



WRITE FOR COMPLETE DESCRIPTION AND PRICES

Faries Manufacturing Company
DECATUR, ILLINOIS

GUIDE

(Continued from page 118)

information and standards for architecture, home furnishings, and all the objects and tools of daily life. Photos. (Mar. Arts and Architecture, p. 139)

HEALTH

Health Centers.

"Health Center Designed for Rural Needs"—J. R. McGIBONY, M.D., SENIOR SURGEON, HOSPITALS FACILITIES SECTION, STATES RELATIONS DIVISION, USPHS. Granting the disproportionate expense of building and maintaining a rural hospital of fewer than 30-50 beds, Dr. McGibony gives some technical advice to those constructing such an institution within the next few months. Charts and floor plans. (Mar. The Modern Hospital, p. 57)

Hospitals.

"Trends in Planning: Broader Service, Greater Centralization"—E. TODD WHEELER, ARCHITECT, DIRECTOR OF PLANNING, MEDICAL CENTER COMMISSION, CHICAGO. This review stresses the importance of consultation between the architect and the hospital administrators in planning. Results of interviews in teaching hospitals and with administrators as to desirable features in new designs. (Mar. The Modern Hospital, p. 49)

"The Small Hospital: 40 Beds—Expansion to 60"—JOHN T. GRISDALE AND J. ROY CARROLL, JR., ARCHITECTS. One-story hospital to be erected in a town between Lancaster and Philadelphia, Pa. Double corridor plan with clerestory over the central unit to provide light and air. Rendering, floor plans, chart of allotment of space. (Mar. The Modern Hospital, p. 49)

"1500 Beds: Multistory Favored for Large Hospital"—THOMAS F. ELLERBE, ARCHITECT. Multistory plan won out over that of the pavilion in considering efficiency of operation in the block-long Kahler Hospital, Rochester, Minn. Renderings and floor plans. (Mar. The Modern Hospital, p. 52)

"New Wing: Function Dictates Modern Layout"—CARL A. ERIKSON, ARCHITECT. The Hackley Hospital, Muskegon, Mich., demonstrates the possibilities in remodeling a hospital built 40 years ago. Photos, floor plans, construction details. (Mar. The Modern Hospital, p. 63)

"Color Scheme for the Comfort of the Convalescent"—HARRY HYMAN, SUPT., REST HAVEN FOR CONVALESCENTS, BROOMALL, PA. Color therapy, defined as making certain colors perform certain health-aiding functions, as used in modern hospitals today. (Apr. The Modern Hospital, p. 86)

"The Emphasis is on *PRE* in Fabrication of Buildings"—AARON NATHAN KIFF, ARCHITECT. Discussion of the relation of prefabrication to modern hospital design. Renderings, diagrammatic sketches, floor plans. (Apr. The Modern Hospital, p. 46)

Nurses' Homes and Dorms.

"The Nicest Nurses' Home per Cubic Foot"—ALBRECHT AND WILHELM, ARCHITECTS. New nurses' home at Massillon City Hospital, Massillon, Ohio, accommodates 40 students and a house mother in a home-like atmosphere. Photos, construction details, floor plans. (Apr. The Modern Hospital, p. 56)

HOUSING

Apartments.

Apartment Project—GREGORY AIN, ARCHITECT. Row-house planning makes for individual entrances at ground level, an enclosed patio adjacent to each unit, and a full basement for storage or recreation purposes under each apartment in this project, resulting in more typical family living space than is usual in multi-family dwellings. Renderings, elevations, and floor plans. (Mar. Arts and Architecture, p. 40)

(Continued on page 122)

For UNINTERRUPTED *lines of light!*

NEW G-E SLIMLINE

Longer lengths and thinner diameters make Slimline ideal for shallow architectural elements. Compact, continuous lines of light overhead or along walls, take one-half the number of lamps, sockets and fixtures. Low and high voltage operation gives brightness control for exposed or louvered installations.

G-E Slimline satisfies the growing demand of modern architectural lighting layouts that call for maximum uninterrupted length. Add to this the new thin diameters which permit minimum dimensions for greater compactness. Slimline is a new, instant starting fluorescent lamp of highest operating efficiency for securing maximum light from relatively small space. And it offers almost endless variety, in creating patterns for coves, walls, panels or wherever you want *uninterrupted lines of light!*

*OVERALL LENGTH

Shelf cross-section — note how ¼" or 1" Slimline will fit it.

Easy to conceal in small spaces, G-E Slimline Fluorescent Lamps are functional lighting tools for shelves and display cases. Also for cornices, valances, case tops, signs, coves, panels and for decorative edge lighting, these lamps are both practical and ornamental.

AIM OF G-E LAMP RESEARCH IS TO MAKE G-E LAMPS

THE CONSTANT

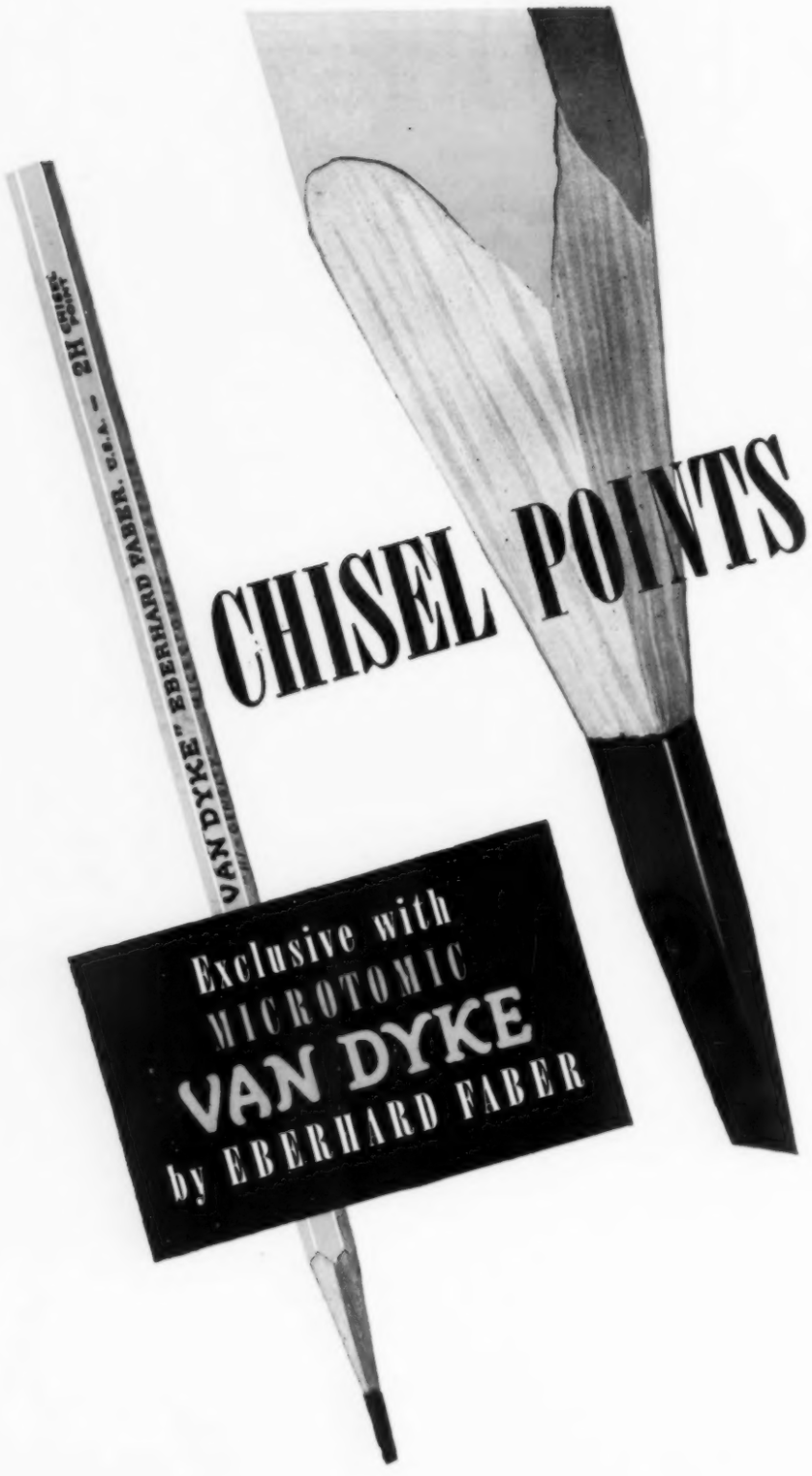
Stay Brighter Longer!

For information on all newer G-E Lamps, call the nearest G-E Lamp office.

ATLANTA 3, GA., 187 Spring St., N.W., WAlnut 9767
BOSTON 10, MASS.....50 High St., HANcock 1680
BUFFALO 2, N.Y., 901 Genesee Bldg., CLeveland 3400
CHICAGO 80, Ill...842 S. Canal St., HARrison 5430
CLEVELAND 14, O., 1320 Williamson Bldg., CH 1010
DALLAS 2, TEXAS, 1801 N. Lamar St., Central 7711
DENVER 2, COLO.....1863 Wazee St., MAin 6141
DETROIT 26, MICH., 1400 Book Tower, CHerry 6910
KANSAS CITY 8, MO...2100 Wyandotte St., VI 7671
LOS ANGELES 13, CALIF.....601 W. 5th St., Mich. 8851
MINNEAPOLIS 13, MINN., 500 Stinson Blvd., GRan. 7286
NEW YORK 22, N.Y., 570 Lexington Ave., Wicker. 2-6300
OAKLAND 7, CALIF...1614 Campbell St., Highgate 7340
PHILADELPHIA 2, PA....1405 Locust St., KINgsley 3336
PITTSBURGH 22, PA.....535 Smithfield St., GRant 3272
PORTLAND 9, ORE., 1238 N.W. Glisan St., BEacon 2101
ST. LOUIS 1, MO., 710 No. Twelfth Blvd., CHestnut 8920
General Offices: NELA PARK, CLEVELAND 12, OHIO

G-E LAMPS

GENERAL ELECTRIC



IDEAL for large dimension tracing sheets calling for extra long lines of unvarying width. Rectangular-shaped, HI-DENSITY Lead sharpens to a super-efficient chisel point that delivers greater line production between repointings. Test this exclusive EBERHARD FABER time-saver at any accredited "Van Dyke" Dealer.

Chisel Point Leads come in degrees: 6H, 4H, 2H, HB, 2B, 4B. Round Leads in 18 degrees from 9H to 7B.

GUIDE

(Continued from page 120)

A Block of Flats in Athens—P. A. SAKELLARIOS, DESIGNER. Photos and floor plans. (The Architects' Journal for Apr. 11, p. 292)

Housing Projects.

"Low-Cost Housing That Pays"—GERARD B. LAMBERT, BUILDER. Good housing can be good business, too, according to this builder of a project of ten 4-room units in Princeton, N. J. Description of the Lambert plan of financing the project. Photos. (Apr. Ladies' Home Journal, p. 44)

Residences.

"The Fritz B. Burns $75,000 Postwar Research Home"—WALTER WURDEMAN AND WELTON BECKETT, ARCHITECTS. Complete coverage of "the house built through research," by Fritz Burns in collaboration with J. Paul Campbell to aid industry and the public in determining which of the postwar innovations in housing are practical and within reach, and which are still in the realm of pure fantasy. Photos, blueprints. (Apr. American Builder and Building Age, p. 76)

"A Modern Adaptation of a French Farm House"—PHILIP MAHER, ARCHITECT. Remodeling job in Urbana, Ill. Photos and blueprints. (Apr. American Builder and Building Age, p. 90)

"Prize Competition Introduces New Bureau for Small House Plans"—A joint project of the Washington State Chapter, A.I.A., and the Seattle Master Builders Assoc., the Small House Plans Bureau intends to offer designs (for which low-cost plans will be available) in today's trend and price range to the returning G.I. and other prospective small house builders. The start-off of the Bureau's collection of homes is a group of 19 designs by leading Seattle architects submitted for this express purpose in a recently conducted competition. Photos, prize-winning designs. (Apr. American Builder and Building Age, p. 95)

"House for a Woodland Setting"—ARTHUR BAER, ARCHITECT. Rustic home in Rocky River, Ohio, particularly harmonious in its woodland surroundings. Photos and floor plans. (Apr. American Builder and Building Age, p. 106)

"Three Houses in Concrete"

I. The Easiform House—D. A. ADAM AND F. STOBART, ARCHITECTS. Permanent concrete house built almost entirely by unskilled labor, according to system first developed by John Laing & Son, Ltd., after the last war. Basis of construction is in the design of the steel shuttering, resulting in walls that are plumb and have a good surface.

II. "Conslab" Construction—P. M. POWELL AND CHARLES WOODWARD (CONSULTANT), ARCHITECTS. Invention of Major L. Shingleton, the method of construction is to use lightly reinforced pre-cast external and internal slabs made of concrete or other suitable materials between which ordinary, lightweight, or moisture-proof concrete filling is placed to form a wall of the desired thickness. Can be entirely erected by unskilled labor.

III. "Arrow" Permanent Housing—THOMAS S. TAIT, ARCHITECT. Simple and unpretentious design, this house is suitable for rural and urban areas. Wall units are pre-cast, standardized, and adaptable for mass production and speedy erection. Method of construction is to use outer walls consisting of concrete slabs in unit size with an inner concrete slab separated by an air space forming a hollow wall. Photos, floor plans, construction details. (Mar. Architectural Design and Construction, p. 68)

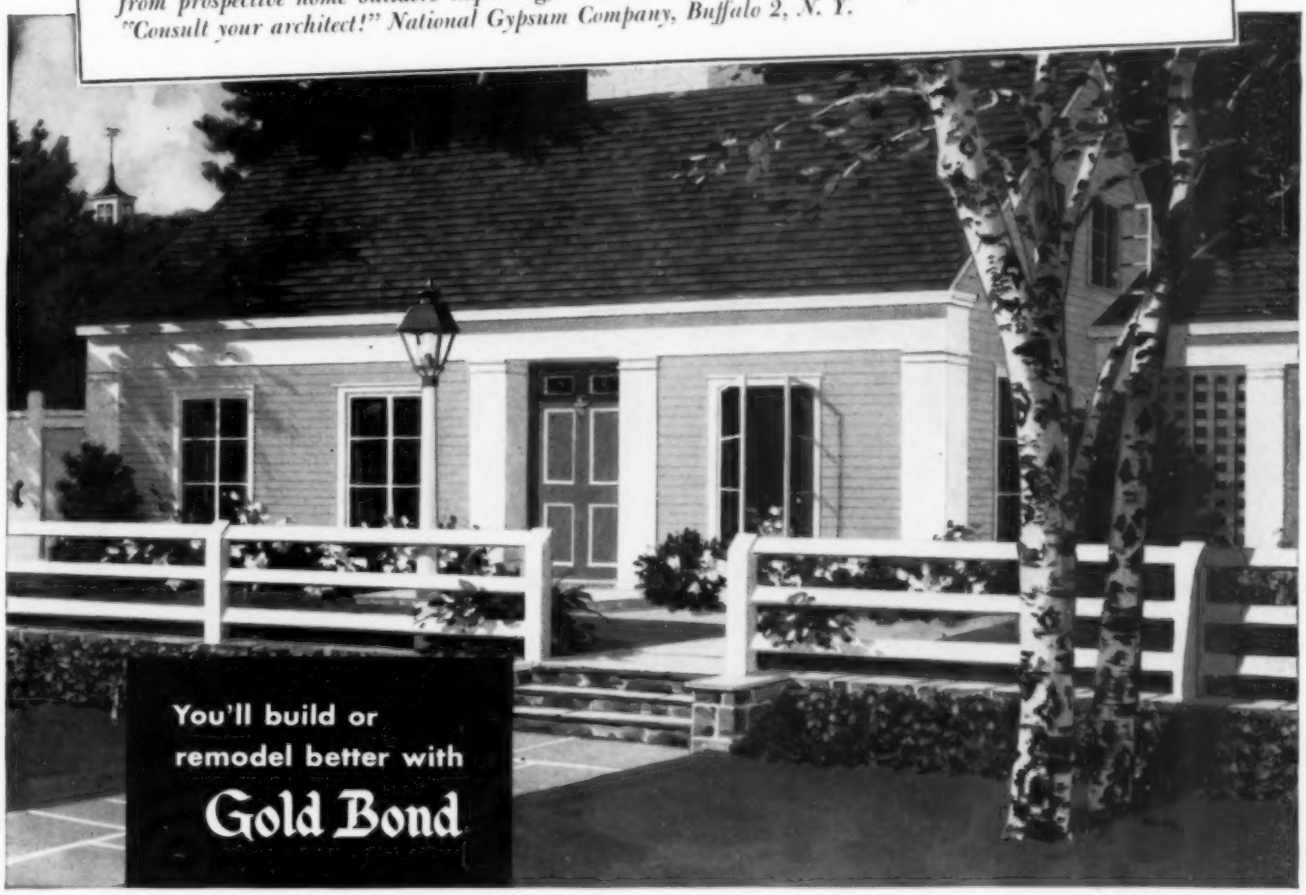
"Full Freedom for the Children and Peace for Parents"—WURSTER, BERNARDI & EMMONS, ARCHITECTS. Richard P. Minor home, San Mateo, Calif., demonstrates flexible modern planning and spaciousness. Photos and floor plans. (Mar. Architectural Record, p. 76)

"Disporting in Florida Sunshine"—MARCEL BREUER, ARCHITECT. The design for a seaside house, "playful throughout, in use as well as in design." Model photos, floor plans, elevations. (Apr. Architectural Record, p. 82)

"Show Place Like Home"—WURDEMAN AND BECKETT, ARCHITECTS. The Fritz B. Burns Postwar House in Los Angeles, Calif. Photos.

(Continued on page 124)

SORRY, NO PLANS AVAILABLE, BUT... *Another full color ad in the new Gold Bond series now running in the Saturday Evening Post. Like previous ads, this will probably bring a flood of letters from prospective home builders inquiring, "Where can we obtain the plans?" And the answer will be, "Consult your architect!" National Gypsum Company, Buffalo 2, N. Y.*



Ask your Gold Bond lumber and building material dealer how to have a home like this. He is headquarters for new building products and ideas.

So nice to come home to!

WHEN you swing off the bus at the corner after a hard day's work, think how nice it would be to come home to a new house like this —all your own! That's what a lot of us have been looking forward to for years. Of course, it doesn't have to be this Cape Cod cottage—nice as it is. You might want a "modern" or a colonial type. Or some other traditional style. Whatever the design, it will be your dream home—and you'll love every inch of it!

Few people build more than one home in a lifetime—so it's important to know before you start what to insist on to make your investment a sound one. Take walls and ceilings for instance. It's easy —for a few months or years—to hide cheap, second-rate quality in walls and ceilings. But today, thanks to Gold Bond's years of research, it's just as easy to build walls that will last virtually forever. Firesafe. Ever so much stronger structurally at no extra cost. Walls that turn away summer heat and keep you warmer in winter. That can be decorated in the most charming colors you've ever laid eyes on with a marvelous new paint that dries in one hour.

You can get these advantages and many more by demanding the six Gold Bond features shown below. They are part of the famous Gold Bond family of 152 better building products, produced in 23 modern plants and sold through 10,000 leading lumber and building material dealers.

There's a Gold Bond Dealer in your locality. See him first when you start thinking about new building or modernizing. He can bring you the latest in building products and ideas. He can really make that new home "so nice to come home to" in beauty and value at no more than the cost of ordinary construction. National Gypsum Company, Buffalo 2, N. Y.

Over 150 tested Gold Bond Building Products for new construction or remodeling add greater permanency, beauty and fire protection. These include wallboard, lath, plaster, lime, sheathing, wall paint, insulation, metal and sound control products.

DEMAND THESE SIX GOLD BOND FEATURES IN YOUR NEW HOUSE

GOLD BOND FIREPROOF GYPSUM SHEATHING

Big, weatherproofed panels of Gold Bond Storm Sealed Gypsum Sheathing add structural strength and built-in fire protection. Cost less than old-style sheathing.

GOLD BOND FLOATING WALL SYSTEM

A new way to build plaster interiors with "floating action" to withstand normal structural strain. Longer lasting beauty. Greater fire protection, less room-to-room noise.

GOLD BOND FIREPROOF GYPSUM LATH

Gold Bond Gypsum lath is the perfect plaster base. Can't warp, expand or contract. Available with insulating vapor-seal, metal back as a barrier to condensation.

GOLD BOND FIREPROOF PLASTER AND LIME

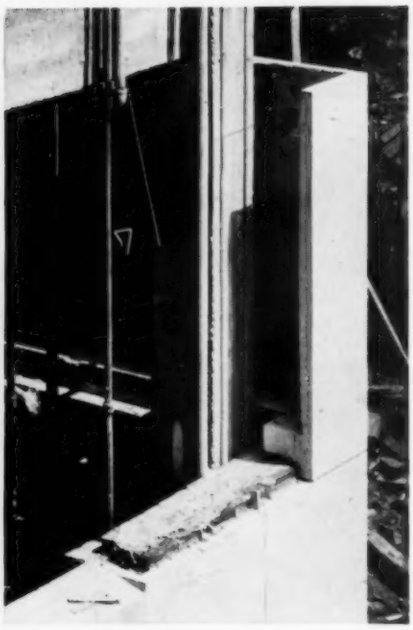
Micron-sized Gold Bond Gypsum Plaster plus specially processed pure white Gold Bond Finish Lime build new beauty and lasting satisfaction into walls and ceilings.

GOLD BOND FIREPROOF ROCK WOOL INSUILATION

For greater year 'round comfort in new and old homes. New. Extra efficient. Waterproof. Fireproof. Verminproof. Cuts heating costs as much as 30%.

GOLD BOND - SUNFLEX 1-HOUR WALL PAINTS

Dries in one hour with no objectional paints, after odor. Easier to apply. This modern decoration is now available at your dealer's in a full range of colorful tones.



To simplify the erection of EXTERIOR WALLS...

Use prefabricated architectural concrete slabs made with Atlas White Cement. Only 2" or 2½" thick—reinforced with steel—they are available in sizes up to 100 sq. ft. or more! They permit the assembly of large pre-cast units at the building site with minimum time and labor—maximum of convenience.

They are frequently used also as forms for structural concrete. When so used, and when a satisfactory bond is obtained between the slabs and the structural concrete, half the slab thickness may be considered effective structurally.

Send for booklet and list of slab manufacturers. Write to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N.Y.

...specify thin, pre-cast ARCHITECTURAL CONCRETE SLABS

made with

PA-AC8-55

ATLAS WHITE CEMENT

a UNIVERSAL ATLAS PRODUCT

U. S. STEEL RADIO SHOW — *Sunday Evenings* — *Consult your local newspaper for time and station.*

GUIDE

(Continued from page 122)

plot and floor plans, construction details. (Apr. Architectural Record, p. 90)

Case Study House #13 — RICHARD J. NEUTRA, ARCHITECT. The second of two houses designed for the magazine's series by Mr. Neutra, who shows how two homes can be built side by side, with houses and gardens in harmonious relationship, and still retain all the privacy desired. Model photos, floor plans, diagrammatic sketches. (Mar. Arts and Architecture, p. 31)

"For Privacy on an Inside Lot" — JOHN NORMILE. New ideas for saving space bring unexpected roominess to a low-cost house. Photos. (Mar. Better Homes and Gardens, p. 30)

"Is Group Building a Good Gamble?" — WIN McCALL. Four families built their homes side by side, planned and constructed as a cooperative affair. (Mar. Better Homes and Gardens, p. 37)

"Home With a Southern Accent" — STRATTON O. HAMMON, ARCHITECT. Using large areas of glass, this one-floor home accents the close relationship of indoor and outdoor living typical of the South. Model photos, construction details. A Better Homes and Gardens 5 Star Plan. (Apr. Better Homes and Gardens, p. 24)

Loon Echo Lodge, Fox Lake, Ontario, Canada. Photos and floor plans. (Mar. Canadian Homes and Gardens, p. 18)

Mountain Holiday House, Ste. Agathe des Monts, Canada — A. LESLIE PERRY, ARCHITECT. Photos and floor plans. (Mar. Canadian Homes and Gardens, p. 23)

Year-Round House in the Hills—A. LESLIE PERRY, ARCHITECT. Ste. Agathe, Quebec, Canada. Photos and floor plans. (Mar. Canadian Homes and Gardens, p. 24)

Vacation House—RANDOLPH C. BETTS, ARCHITECT. Compact cottage at Ste. Agathe Quebec, Canada. Photos and floor plans. (Mar. Canadian Homes and Gardens, p. 25)

Laurentian Chalet—CHRYSTIE L. DOUGLAS, DESIGNER. Photos and floor plans. (Mar. Canadian Homes and Gardens, p. 26)

"Free-Flowing Design—Canada West" —ROBERT McKEE, ARCHITECT. Vancouver, B. C., home typical of the new fresh architecture being practiced in the Western region of Canada. Characteristic features include closeness to the ground, story-and-a-half height, and ample front terraces. Photos and floor plans. (Apr. Canadian Homes and Gardens, p. 36)

"Home Expansible"—J. E. MUMFORD, DESIGNER-OWNER. Single-story cottage planned for possible expansion. Photos and floor plans. (Apr. Canadian Homes and Gardens, p. 38)

"Glass and Clapboard"—HANKS & IRWIN, ARCHITECTS. Colonial home distinguishing for its front, projecting bay window. Photos and floor plans. (Apr. Canadian Homes and Gardens, p. 39)

Ranch House for a Large Family — GARDNER A. DAILEY, ARCHITECT. All-wood house of modern design built in the California ranch country. Photos and floor plans. (Apr. Canadian Homes and Gardens, p. 40)

"Two Houses—One for a Small Family; One for a Large" — L. MORGAN YOST; DAVID J. ABRAHAMS, ARCHITECTS. Two of the prize winners in House and Garden's national architectural contest. Renderings and floor plans. (Apr. House and Garden, p. 92)

"How 4,000 Peoria Families Built Their Own Homes" — Faced with high building costs five years ago, these families built their own homes, reducing costs 25%. Many have doubled in value since built. Photos. (Mar. House Beautiful, p. 112)

"Meet a Family that Really Knows How To Live" — CLIFF MAY, OWNER-DESIGNER. Complete coverage of the May home in Los Angeles, Calif. Photos, site and floor plans. (Apr. House Beautiful, p. 75)

"Take Your Choice" — CAMERON CLARK; EDWARD D. STONE, ARCHITECTS. Two homes, one traditional, one modern, containing the same total space, with the same basic living scheme the guide in their design. Photos and floor plans. (Mar. Ladies' Home Journal, p. 222)

(Continued on page 126)

SPACE SAVING—A FACTOR . . .
Streamline
TRADE MARK REG. U. S. PAT. OFFICE
HELPS PROVIDE IT!
MUELLER BRASS CO.—PORT HURON, MICHIGAN—STREAMLINE MUELLER BRASS CO.—PORT
HURON, MICHI
STREAMLINE

Conservation of space is a very important consideration, especially in large public buildings and hotels. The more space that can be utilized for rentable apartments, the more income produced. Since STREAMLINE Fittings are not connected by flaring or threading, no room is required for wrench play to tighten the Fittings into place, nor need any allowance be made for protruding valve stems, which on threaded pipe, must be swung in an arc to secure. Valves and fittings are installed in a minimum of space, they are located exactly where required, and soldered.

The installation of STREAMLINE Copper Pipe and Solder Type Fittings under normal water conditions assures many, many years of trouble-free, efficient service at low cost. Copper and bronze do not rust. STREAMLINE Pipe is made from pure copper. STREAMLINE Fittings are manufactured in copper and bronze.

Copper Pipe loses less heat by radiation than ferrous piping, particularly if the surface is kept polished, although copper itself is a very rapid conductor of heat. Therefore, it naturally follows that there is considerably less loss when the heated element, water or steam, is being conveyed from the point of generation to the points of distribution through copper pipe of uniform, unclogged, internal conducting area.

Plan on specifying and installing STREAMLINE Copper Pipe for your postwar construction—or for replacement.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

The little line that's all there

When a line is ruled on Arkwright Tracing Cloth, the ink flows like molten lead, and "freezes". It's all there. Make a mile of lines and you'll never strike a place where the cloth refuses to take ink.

This feature of Arkwright Cloths saves time, and time means money.

Arkwright's transparency saves time, too. A draftsman can *see*, easily and accurately. It is permanent, because transparency is achieved by mechanical processing, not by the use of surface oils. It doesn't become opaque with age.

Arkwright's freedom from imperfections saves time, money, and bad tempers. There are no nibs to trip a pen; no dirt, no stains. There are no pin holes, first or last. Repeated erasure never results in a feathered line.

Executives, purchasing agents, and draftsmen; all are interested in saving time, money, or both. To them samples are sent gladly. Write to Arkwright Finishing Company, Providence, R. I.

★

Sold by leading drawing material dealers everywhere

★

Arkwright

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

GUIDE

(Continued from page 124)

"A House for a Millionaire With No Servants"—PHILIP C. JOHNSON, DESIGNER. Modern home designed with two stipulations in mind: no budget restrictions, and a home that could be run without aid of outside help. House model and floor plans. (Apr. Ladies' Home Journal, p. 227)

"Easy to Live in . . . Easy to Look at"—C. C. BRIGGS, ARCHITECT. Small, modern, one-story house with Borg-Warner's service core in a compact plan. Photos and floor plans. (Mar. McCall's, p. 50)

Cape Cod Cottage—ROYAL BARRY WILLS, ARCHITECT. Photos and floor plans. (Apr. McCall's, p. 77)

"A Realistic House for a Family in Georgia"—Report of the results of the recently held Progressive Architecture-Rich's, Inc. Architectural Competition for the design of a home for a Georgia family of four with an income of $3000 a year. It was stipulated that the house be economically buildable out of materials actually on the market or known to be in production. Renderings and floor plans of the prize-winning designs and mentions. (Apr. Progressive Architecture, p. 62)

"Direct Approach to Simple Living"—WALTER CURT BEHRENDT, OWNER-ARCHITECT; JOHN SPAETH, JR., ASSOC. Small, unadorned house given a kind of dignity by its very simplicity of design. (Mar. The American Home, p. 36)

"Flexible Modern Living on Two Levels!"—ED. D. STONE, ARCHITECT; STANLEY C. REESE, ASSOC. Small, two-story house of unique arrangement. The first floor, with the compact utility unit, is devoted to an all-purpose room, leaving the second floor free for the more routine ways of living (living, dining, and bed rooms). Model photos and floor plans. (Mar. The American Home, p. 38)

"House that Puts the Sun to Work"—Large areas of insulated glass plus well planned orientation on corner lot gain year 'round use of sun rays for modern Canadian house. Rendering and floor plan. (Mar. The American Home, p. 40)

"Small Homes Don't Have to be Cute!"—WM. F. HEMPEL, ARCHITECT. Nice arrangement of living and dining rooms creates greater space illusion in this compact plan. Photos and floor plans. (Mar. The American Home, p. 32)

"Spaciousness and Privacy"—WILLIAM WURSTER, ARCHITECT. Richard P. Minor home, San Mateo, Calif. Photos and floor plans. (Apr. The American Home, p. 35)

"$75,000 Showcase"—WURDEMAN AND BECKETT, ARCHITECTS. The Fritz B. Burns Postwar House. Photos, floor plans, details. (Mar. The Architectural Forum, p. 98)

A Portfolio of Work by Bertrand Goldberg—An ardent disciple of Mies van der Rohe, this young Chicago architect designs beautiful as well as functional homes. Five illustrative homes shown, and a service station hung from masts to minimize foundations and costs. Photos, floor plans, construction outlines. (Mar. The Architectural Forum, p. 107)

The Wyatt Program—High-spots of the Wyatt plan; description of the organization to put it into effect; materials shortages and their relation to the requirements demanded for the execution of the Wyatt program. (Apr. The Architectural Forum, p. 94)

Ten Prize-Winning Houses—The Forum's selection of the 10 best low-cost houses among the 24 prize designs in the recent Chicago Tribune "Chicagoland Prize Homes Competition." Renderings and floor plans. (Apr. The Architectural Forum, p. 112)

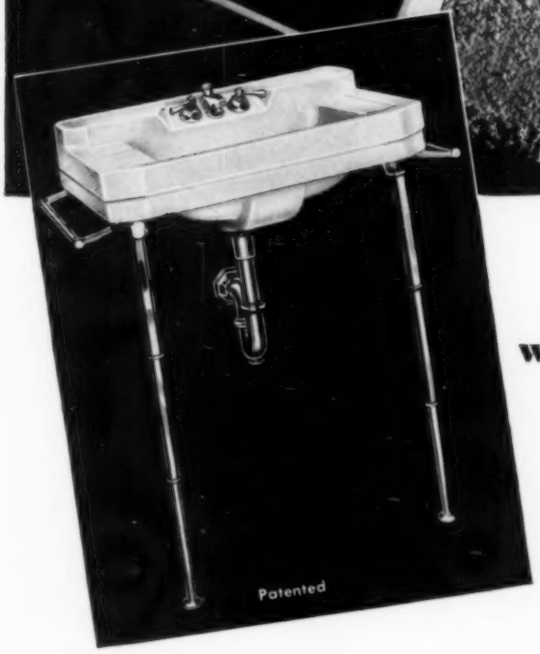
"Low-Cost Houses"—A portfolio of well-planned houses published during the past ten years that come within the cost limitations of the Wyatt program, proving that low cost need not mean low standards of design. Photos and floor plans. (Apr. The Architectural Forum, p. 117)

"The 8,000 lb. House"—RICHARD BUCKMINSTER FULLER, DESIGNER. Complete coverage of the round, $6500 Fuller house. "A surprisingly flexible, livable arrangement of three generous rooms plus two baths, entrance hall and kitchen, complete with 'front' and 'back' doors.'" Photos, floor plans, diagrammatic sketches. (Apr. The Architectural Forum)

(Continued on page 128)

Case Study House #11

the "GI" model



WITH Case PLUMBING FIXTURES

Planned to satisfy high standards of convenience and comfort without exceeding the limits of "G I" budgets, this house is designed with two efficient bathrooms. The Case plumbing fixtures were selected by the architect to meet both requirements in full. Their design, *vitreous china* construction and mechanical excellence assure lifetime satisfaction and freedom from costly maintenance. Case plumbing fixtures are distributed nationally—see your Classified Telephone Directory or write W. A. Case & Son Mfg. Co., Buffalo 3, N. Y. Founded 1853.

THE LAVATORY is the ever-popular *Cosmette* with concealed front overflow, anti-splash rim, chrome finish accessories and convenient shelf. Available also in wall-hung style.

★

THE WATER CLOSET is the 2-piece combination *DeLuxe* model, with modern styling and a silencing device that assures quietness under all pressures. Free-standing tank does not deface the wall.

try one of these

Famous Drafting Pens

free!

Imagine pen points stamped from paper-thin steel—accurate to 1/1,000th of an inch! That's the story of these Esterbrook Drafting Pens, especially made for the finest drafting work. Try one at our expense. Use the coupon below.

ATTACH THIS TO YOUR LETTERHEAD

Send the make and number of the drafting pen you now use most—the corresponding pen in the Esterbrook Drafting series will be sent to you for trial without charge. Write today!

Make .....

Pen No. .....

THE ESTERBROOK PEN CO.
38 Cooper Street, Camden, N. J.
***or* The Brown Brothers, Ltd.**
Toronto, Canada

Esterbrook
Drafting Pens

GUIDE

(Continued from page 126)

The Braithwaite House—The New Houses, No. 7—F. R. S. YORKE, DESIGNER. The Braithwaite system consists of standard steel frames to which external and internal cladding can be fixed. Houses of any plan, one to four stories high, can be built with these units. Photos, floor plans, construction diagrams. (Mar. The National House Builder and The Building Digest, p. 13)

MEMORIALS

"The Park Arboretum as a Living Memorial"—by DONALD WYMAN, ARNOLD ARBORETUM OF HARVARD UNIVERSITY. A suggestion that the park arboretum, an educational as well as recreational facility, be given consideration as a living war memorial. Photos. (Apr. The American City, p. 92)

PLANNING

City.

"Boone, Iowa, Plans New Main Street"—REUBEN S. LANTZ, ARCHITECT. Plan for modernizing both sides of the two principal business blocks in the city on a community or group rather than individual basis. Present photos and proposed modernization renderings. (Apr. American Builder and Building Age, p. 108)

"More Land for London"—Article by W. G. HOLFORD, re the County of London Plan, authored by Patrick Abercrombie and J. H. Forshaw, a detailed proposal for the deliberate dispersal of excess population around London. Maps and photos. (Mar. Architectural Record, p. 86)

"Redevelopment Proposals for Baltimore"—Re report of the Commission on City Plan of Baltimore issued recently. Suggested redevelopment plan of a typical block. (Mar. The American City, p. 92)

Plan for Exeter—MRS. MARGARET TOMLINSON reviews favorably the proposals for the plan prepared by Thomas Sharp for the rebuilding of Exeter, which suffered heavily in its one-night blitz during the war. Photos, maps, and diagrammatic drawing. (The Architects' Journal for Mar. 7, p. 195)

"Knutsford—An Experiment in Redevelopment Sponsored by the News Chronicle"—STANLEY BARON reviews the new Knutsford Plan, which demonstrates the ordered growth of the town as a self-contained community, visualized as taking place over a 30-year period. Photos, site plans, model photos. (The Architects' Journal for Apr. 11, p. 287)

Community.

"The Planning of Residential Areas"—GORDON STEPHENSON. Paper read to an informal meeting of the R.I.B.A., stressing the fact that urban redevelopment can never be satisfactory unless a master plan is conceived and executed. References to planning solutions in the U. S. and Holland. Photos and diagrammatic drawings. (Feb. Journal of the R.I.B.A., p. 107)

"A Community Service Experiment that Works"—New division of Kansas City, Mo., Welfare Dept. promotes community planning and community responsibility, particularly emphasizing the needs of youth. (Mar. The American City, p. 85)

Home.

"The House I Want"—GRACE L. McCANN MORLEY, DIRECTOR, SAN FRANCISCO MUSEUM OF ART. Article serving as introduction to coverage of six lectures on architecture and related subjects sponsored by the museum and the Northern Calif. Chapter, A.I.A. Photos. (Mar. Architect and Engineer, p. 7)

"Look Homeward, Housing"—VERNON DE MARS. An article discussing public and private building, and planned projects and their relationship to the present housing crisis. Photos, sketch of project planned by the author. (Apr. Architectural Record, p. 86)

(Continued on page 130)

New and Different!

AWNING WINDOWS
by
GATE CITY

AWNING windows of wood—different from any other type of window—are Gate City's contribution to better living and working conditions in homes, offices, schools and public buildings. These new windows promote circulation without fans or other equipment. They permit ventilation in rainy weather without risk of water damage to floors, furniture or decoration. And they are adaptable to practically any type of architecture.

They are safe because cleaning is done from indoors. Screens and storm windows are also inside, where they are protected from the weather. This feature also eliminates unsightly rain streaks under windows. All units in a tier open and shut simultaneously and without effort by means of a simple worm gear and crank. Tiers may be combined with others or with fixed lights in any combination.

Hardware is available for prompt shipment. Any millwork manufacturer can fabricate the complete window, including glass and hardware, in his own plant, thus assuring delivery of a completely pre-fabricated unit to the job.

Before specifying conventional windows, investigate awning windows by Gate City. See Sweet's or write for latest information to Gate City Sash & Door Co., Dep't. P, Fort Lauderdale, Fla.

● **See our demonstration unit at Architects' Samples Corp., 101 Park Avenue, New York City.**

Gate City
AWNING WINDOWS
and Type "D"
Awning Window Hardware

first impressions are lasting

The entrance door should create a first impression of friendliness and hospitality . . . expressed in its fine architectural detail and rich graceful hardware.

Lockwood Entrance Door Handle Sets, in enduring brass and bronze, offer a wide range of choice in authentic design with quality and workmanship insuring lasting security.

Other handles and Lockwood designs are shown in Sweet's Architectural Catalog 1946, Section 17b1. Reprint on request.

L-3A

LOCKWOOD HARDWARE MANUFACTURING COMPANY
Division of Independent Lock Company • Fitchburg, Massachusetts

lockwood builders' hardware

15 cents

"DEMAND THE BEST!"

J. S. STAEDTLER, INC.
53-55 WORTH STREET
NEW YORK, N.Y.

GUIDE

(Continued from page 128)

"Guide for Home Planners" — JOHN NORMILE. Checklist for prospective home builders, stressing the fact that good planning is essential if all desires are to be satisfied in the resulting design. (May Better Homes and Gardens, p. 23)

"Make Your Building Plans Now" — JOHN CAULFIELD SMITH advises the potential home builder to take his problems to an architect. "He designs to your specifications. He'll synchronize your needs, tastes, and purse." (Apr. Canadian Homes and Gardens, p. 35)

School.

"The Architect in Action On Schools" — School planning survey methods of the Ernest J. Kump Co., school specialists on the West Coast, are noted, including a general outline for such a survey. Maps, photos, models. (Mar. Architectural Record, p. 95)

United Nations.

Capital for the United Nations — ED. ALLEN, INTERNATIONAL NEWS CORRESPONDENT. Article treating of housing for U. N. headquarters, selection of a permanent site, and building requirements. Photos and map. (Mar. Architectural Record, p. 82)

"A Home for the U.N.O." — A plea for an international competition to select the architect (s) of the permanent U.N.O. headquarters. Photos and renderings. (Apr. Progressive Architecture, p. 98)

"The Hunt for a World Headquarters Site" — C. McKIM NORTON, EXEC. VICE PRESIDENT, REGIONAL PLAN ASSOC., N. Y. Terms cited which guided the choice of the Inspection Group of the Site Committee of the Interim Committee on Headquarters of the U.N. Map of districts visited. (Mar. The American City, p. 86)

PUBLIC BUILDINGS

Power Board and Municipal Building, Guntersville, Ala. — GILL AND BIANCULLI, ARCHITECTS. Ala. State Planning Board and TVA's Dept. of Regional Studies collaborate to produce a new type of multi-use public building, still in project form. Renderings, site and floor plans. (Mar. The Architectural Forum, p. 139)

RELIGION

Churches.

Community Church, St. Helier's, Morden, Surrey, England — EDWARD D. MILLS, DESIGNER. This community church located on a large housing estate is designed as an all-purpose center for all week use. Model photos and floor plans. (Mar. Architectural Design and Construction, p. 77)

RESTAURANTS

"Reconditioned Irish Restaurant" — NOEL MOFFETT, DESIGNER. A French elegance is produced in an Irish environment in this remodeling project of a French restaurant in Dublin. Photos, floor plans. (The Architects' Journal for Mar. 7, p. 199)

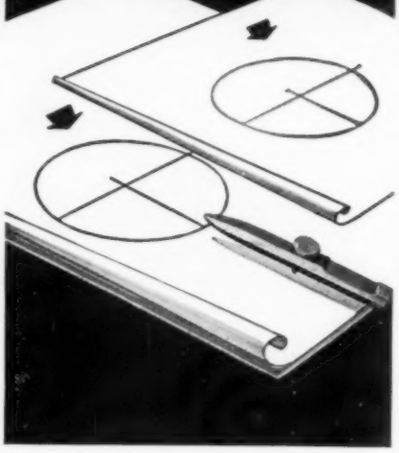
TRANSPORTATION

Airlines.

"Worcester Builds its Own Airport Without Federal Aid" — GEORGE E. COMSTOCK, COUNCILMAN, MEMBER JOINT STANDING COMMITTEE ON AIRPORTS, discusses the new two-million dollar municipal airport outside of Worcester. The administration building, to be started this spring, will have provisions for expansion, should future traffic demand it. Two plans for management, construction details, and financing. (Apr. The American City, p. 87)

(Continued on page 132)

Tracing cloth that defies time



● The renown of Imperial as the finest in Tracing Cloth goes back well over half a century. Draftsmen all over the world prefer it for the uniformity of its high transparency and ink-taking surface and the superb quality of its cloth foundation.

Imperial takes erasures readily, without damage. It gives sharp contrasting prints of even the finest lines. Drawings made on Imperial over fifty years ago are still as good as ever, neither brittle nor opaque.

If you like a duller surface, for clear, hard pencil lines, try Imperial Pencil Tracing Cloth. It is good for ink as well.

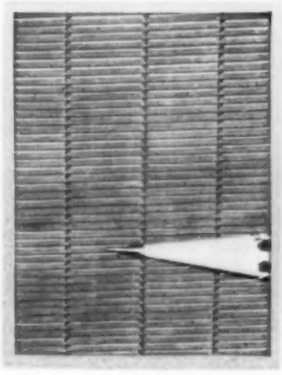
IMPERIAL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

Bring SHADED COMFORT TO EVERY SUN-EXPOSED ROOM!

Specify KOOLSHADE* SUN SCREEN

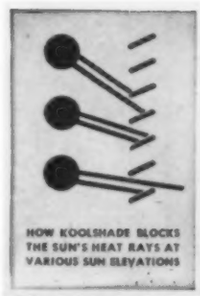
The pleasant shade of your favorite summer haunt can be brought to every scorching, sun-heated room. No other shading device so effectively keeps out the blistering heat rays of the summer sun. Every elusive breeze drifts in. There is an abundance of clear, glareless light. The view from inside is neither blocked nor blurred. KoolShade assures you cooler summertime comfort in every sun-exposed room.



WHAT IS KOOLSHADE

In effect it is a miniature outside venetian blind. Paper-thin bronze "slats" are permanently set at a 17° slant . . . blocking sun's heat rays *outside* the window. It frames and installs as simply and neatly as ordinary insect screen.

◀Outdoors, the sun "sees" the flat of the slats like this picture. Indoors, only the paper-thin edges are seen . . . you can see out clearly.



HOW KOOLSHADE BLOCKS THE SUN'S HEAT RAYS AT VARIOUS SUN ELEVATIONS

WHY ROOMS GET HOT

Sun heat rays pouring through glass windows cause up to 75% of room heat. Objects in the room get hot . . . radiate heat. There is a continuous rise in temperature because glass resists the passage of radiated heat. The room gets hotter and hotter.

WHAT KOOLSHADE DOES

KoolShade keeps sun-exposed rooms as much as 15° cooler by blocking, reflecting, absorbing and radiating up to 90% of the sun's heat rays OUTSIDE THE WINDOW. Lets in lots of cool light and air.

NOTE THESE VALUABLE FEATURES

- *Permanently adjusted for greatest shading efficiency.*
- *Prevents fading of valuable drapes and furnishings.*
- *Completes insulation—reduces cost of air conditioning.*
- *Easy and inexpensive to install—will not rust, rot or rattle.*
- *Fits neatly and smoothly into modern architectural design.*
- *Durable bronze KoolShade also effective as insect screen.*

FOR FREE SAMPLE AND LITERATURE, TEAR OUT AND MAIL THIS COUPON

Ingersoll
KOOLSHADE* SUN SCREEN

*Trade Mark Property of INGERSOLL STEEL DIVISION · BORG-WARNER CORPORATION

Ingersoll Steel Division
Borg-Warner Corp., Dept. J6
310 South Michigan Ave., Chicago 4, Ill.

Send Sample and Literature on KoolShade Sun Screen.

Name: .....

Company: .....

Address: .....

City: ..... State: .....

Born to be
FORGOTTEN!

•

CLEVELAND
NOISELESS
SASH PULLEY

If windows are to have a low maintenance cost . . . trouble-free for the expected life of the building, then the pulleys truly must be "born to be forgotten".

These pulleys incorporate a hard, White Maple wood bearing — absolutely noiseless and lasting the life of the window! Made of quality castings of grey iron, bronze, brass or aluminum. Send for folder, prices and guide for specifications.

•

CLEVELAND LOCK WORKS
DIVISION OF
THE CONSOLIDATED IRON-STEEL MFG.
1273 EAST 53rd ST., CLEVELAND 14, O.

GUIDE

(Continued from page 130)

Railroads.

"L.M.S. Architectural Development Work" — Re addresses given at a recent meeting of the Architectural Association, London, by W. H. Hamlyn, Architect to the L.M.S. Railway, and Llewellyn Davies, Architect in charge of the Development Section, particularly referring to an experimental prefabricated station. Photos, plans, construction details. (Mar. Architectural Design and Construction, p. 82)

"Unit-Built Stations"

Part I. The Early Developments — DR. J. L. MARTIN. Discussion of those developments that give expression to the new building techniques, the success of which so largely depended on rail transport. Photos.

Part II. The L.M.S. Experimental Unit —WILLIAM H. HAMLYN, ARCHITECT TO THE L.M.S. RAILWAY CO. Description of the prefabricated station building constructed at Queen Park. Photos and floor plans.

Part III. The Unit in Use — Dr. J. L. MARTIN. Progress drawings of the unit, plans, and application of the unit to special building sites. (Mar. The Architectural Review, p. 77)

PERIODICALS NOTED IN THIS ISSUE:

AMERICAN BUILDER AND BUILDING AGE, 105 West Adams St., Chicago 3, Ill.

ARCHITECT AND ENGINEER, 68 Post St., San Francisco 4, Calif.

ARCHITECTURAL DESIGN AND CONSTRUCTION, 26 Bloomsbury Way, London W. C. 1, England

ARCHITECTURAL RECORD, 119 West 40th St., New York, N. Y.

ARTS AND ARCHITECTURE, 3305 Wilshire Blvd., Los Angeles 5, Calif.

BETTER HOMES AND GARDENS, 1714 Locust St., Des Moines 3, Iowa

BUILDING AND ENGINEERING, 20 Loftus St., Sydney, Australia

CANADIAN HOMES AND GARDENS, Dominion Square Bldg., Montreal Centre 2, Canada

HOUSE AND GARDEN, 420 Lexington Ave., New York 17, N. Y.

HOUSE BEAUTIFUL, 572 Madison Ave., New York 22, N. Y.

JOURNAL OF THE R.A.I.C., 57 Queen St. West, Toronto 1, Canada

JOURNAL OF THE R.I.B.A., 66 Portland Place, London W. 1, England

LADIES' HOME JOURNAL, 1270 Sixth Ave., New York, N. Y.

McCALL'S, 230 Park Ave., New York 17, N. Y.

PROGRESSIVE ARCHITECTURE - PENCIL POINTS, 330 West 42nd St., New York 18, N. Y.

RECREATION, 315 Fourth Ave., New York 10, N. Y.

THE AMERICAN CITY, 470 Fourth Ave., New York 16, N. Y.

THE AMERICAN HOME, 444 Madison Ave., New York, N. Y.

THE ARCHITECTS' JOURNAL, 45 The Avenue, Cheam, Surrey, England

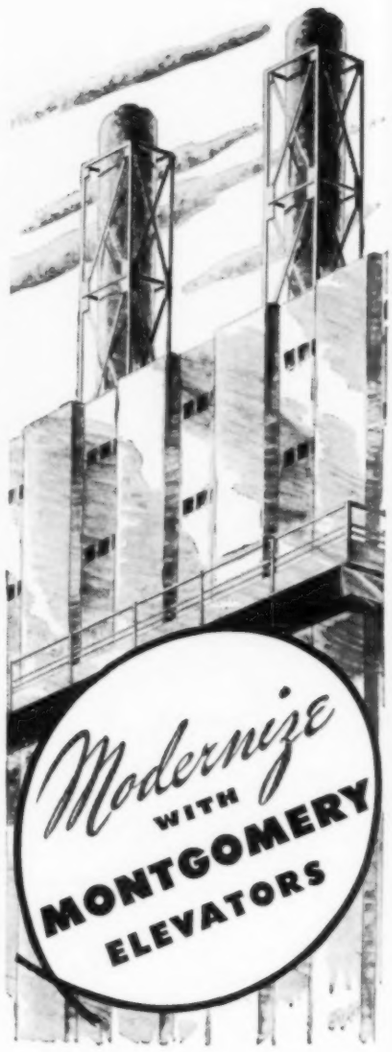
THE ARCHITECTURAL FORUM, 350 Fifth Ave., New York 1, N. Y.

THE ARCHITECTURAL REVIEW, 45 The Avenue, Cheam, Surrey, England

THE MODERN HOSPITAL, 919 North Michigan Ave., Chicago 11, Ill.

THE NATION'S SCHOOLS, 919 North Michigan Ave., Chicago 11, Ill.

THE NATIONAL HOUSE BUILDER AND THE BUILDING DIGEST, 17 Stratford Place, London W. 1, England



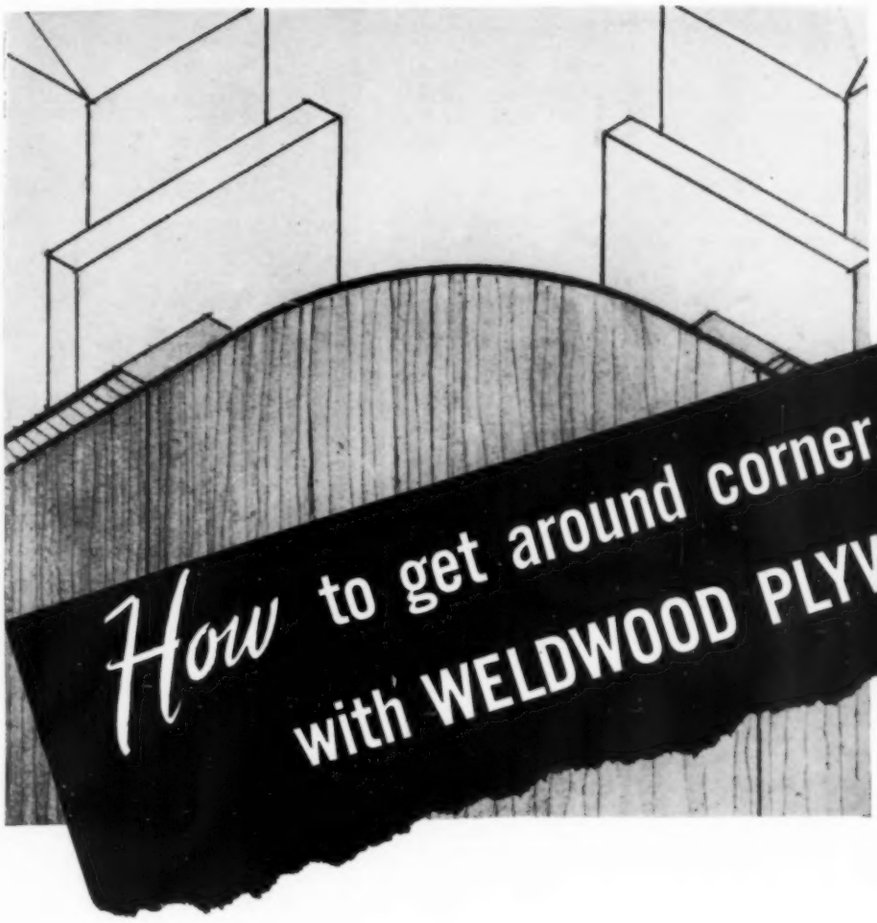
THE ADDITION or replacement of elevators should be given careful consideration in any modernization program. By adding or improving vertical transportation, traffic flow may be speeded. In an industrial building, installation of modern freight elevator equipment helps to combat rising costs and at the same time improve working conditions for employees.

Montgomery's engineering staff and representatives are qualified to advise you on what type elevator equipment will best solve the vertical transportation problems of any type of building.

A Montgomery designed elevator system will usually be lower in initial cost, always dependable in service and most economical in operation and maintenance.

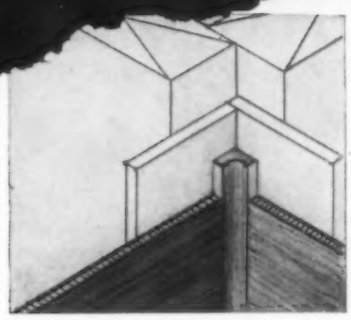
Montgomery manufactures a complete line of passenger and freight elevators, electric dumbwaiters and special equipment for vertical transportation.

MONTGOMERY
Elevator COMPANY
Home Office: Moline, Illinois
Branch Offices and Agents in Principal Cities

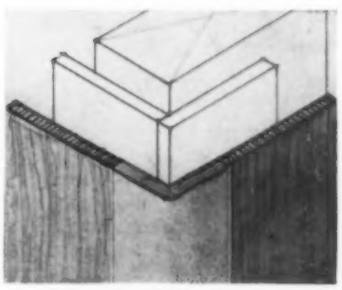


How to get around corner problems... with WELDWOOD PLYWOOD

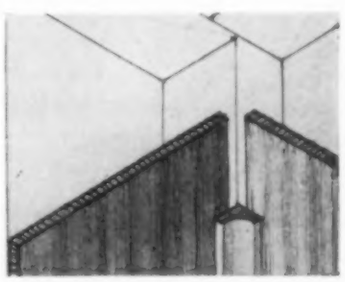
1. This Weldwood Snap-in Internal Corner, made of wood veneer mounted on thin, flexible metal, harmonizes gracefully with modern curved architectural effects. Glue is applied between the backing-strip and stud, and the entire corner assembly is snapped into position.



2. Internal corner, showing fir sticks finished with standard ¾ x 1⅝ inch cove mold set between panels.



3. Attractive external corner with fir sticks, finished with standard one-piece corner molding.



4. Internal corner showing Weldwood applied direct to framing with ½ inch vent opening and stock ¾ x 1⅝ inch cove molding.

The illustrations on this page show a few of the ingenious and attractive corner treatments featured in the new Weldwood Plywood installation booklet.

With Weldwood you can achieve charming and unusual architectural effects . . . save plaster costs and headaches, too.

Made in the finest domestic and imported woods, Weldwood provides an infinite variety of exquisite grains and subtle tones.

And remember, Weldwood Plywood is *guaranteed* to outlast any building in which it is used.

Send for free booklet

The new Weldwood Installation Booklet is profusely illustrated with photographs and detailed drawings. It gives a fund of useful information concerning Weldwood's many advantages, and its place in today's building picture. Send for your free file copy today.

Weldwood

Plastics and Wood Welded for Good

Waterproof Weldwood for exterior use is bonded with phenol formaldehyde synthetic resin. Other types of water-resistant Weldwood for interior applications are manufactured with extended urea resins and other approved bonding agents.

WELDWOOD Plywood

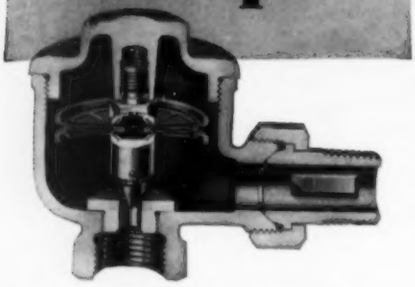
Weldwood Plywood and Mengel Flush Doors are products of

UNITED STATES PLYWOOD CORPORATION *New York 18, N. Y.* **THE MENGEL COMPANY,** Incorporated *Louisville 1, Ky.*

Distributing units in Baltimore, Boston, Brooklyn, Chicago, Cincinnati, Cleveland, Detroit, High Point, Los Angeles, Newark, New York, Oakland, Philadelphia, Pittsburgh, Rochester, San Francisco, Seattle. Also U. S.-Mengel Plywoods, Inc. distributing units in Atlanta, Jacksonville, Louisville, New Orleans, St. Louis. *In Canada:* United States Plywood of Canada, Limited, Toronto.

Send inquiries to nearest point.

Long Service from Webster Traps



In the office building of Chase Brass & Copper Co., Webster Radiator Traps gave 26 years of satisfactory service before long wear made interior replacements necessary. Webster Thermostatic Radiator Traps give extra years of service—design, quality materials, precision manufacture and careful inspection are the "reasons why". There's no waste of "live" steam because Webster Traps hold steam in the radiator until it has given up all of its useful heat. There is quick, continuous and complete discharge of air and condensation.

If your radiator traps need replacement, consult the nearest Webster Representative, or write us direct.

Office building of the Chase Brass & Copper Company, Waterbury, Conn.

WARREN WEBSTER & CO., Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Representatives in principal Cities : : Est. 1888
In Canada, Darling Brothers, Limited, Montreal

Fuel Saving Starts With CONTROL

AUTOMATIC Webster Heating Systems

NOTICES

GRAVELL & MINICK, Architects—Engineers, announce the opening of offices at Front & Harris Sts., Harrisburg, Pa.

JOSEPH N. BOAZ has opened an office for general practice of architecture at the First National Bldg., Oklahoma City, Okla.

JOHN H. TRULUCK, JR., having been discharged from the service, has gone back to the practice of architecture at Press and Standard Bldg., Walterboro, S. C.

LEO L. FISCHER, Architect, has resumed practice after 4½ years in the Armed Forces, at 17 Academy St., Newark 2, N. J.

CARL E. RIEMENSCHNEIDER, Architect, has established offices for the practice of architecture and design at 2659 N. 27th St., Milwaukee 10, Wis.

WILLIS L. STEPHENS, Architect, has opened offices for the practice of architecture at 1201 Kings Ave., Jacksonville 7, Fla.

CHARLES F. NEERGAARD, Consultant in Hospital Planning, Organization, and Management, announces that DR. ALLAN CRAIG and LOUIS B. MCCAGG, JR. Architect, have become associated with him in his practice at 41 E. 42nd St., New York 17, N. Y.

LT. COMMANDER PAUL E. KOHLER, JR. announces the reopening of his office for the practice of architecture at 253 Worth Ave., Palm Beach, Fla.

RAYMOND L. VOSKAMP and FRANK R. SLEZAK, Architects, have established an office at 112 E. 10th St., Kansas City 6, Mo.

JESSE M. PAGE, JR. has returned from active duty with the Seabees and announces the reopening of his office for the practice of architecture at 116½ W. Martin St., Raleigh, N. C.

CHARLES N. ROBINSON, Architect, has opened an office in Lancaster, S. C.

COMMANDER WILLIAM PLATT, U.S.N.R., and MAJOR GEOFFREY PLATT, A.U.S., having been released from active duty have reopened the office of WILLIAM & GEOFFREY PLATT, Architects, 101 Park Ave., New York 17, N. Y.

The offices of the SOUTHERN CALIFORNIA CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS, the CALIFORNIA COUNCIL OF ARCHITECTS, and the LIBRARY OF ARCHITECTURE AND ALLIED ARTS, are now at one central location, 3757 Wilshire Blvd., Los Angeles, Calif.

CORRECTION

In our April issue the Mention design in the PROGRESSIVE ARCHITECTURE-Rich's, Inc. Architectural Competition presented on page 82 should have been credited to Roland K. Kuechle rather than to David K. Kuechle.

STEEL JOISTS FOR RESIDENTIAL CONSTRUCTION

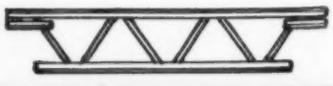
STEEL JOISTS — the economical member with structural advantages requisite for permanence of modern structures.

FIRE RESISTANT
Non-Combustible, reduces fire hazard. Fire proof with insulating plaster ceilings.

PERMANENT
No shrinking, sagging or warping. Termite protection.

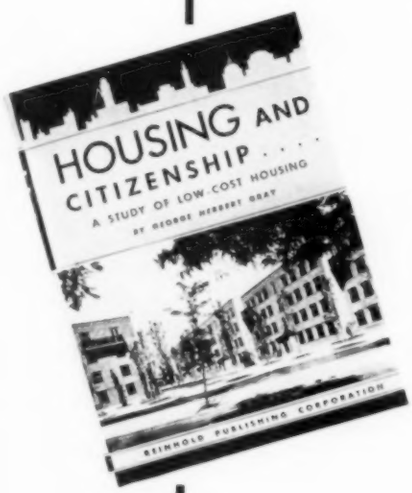
VERSATILE
Full width spans. Fewer columns and walls.

EFFICIENT
Prefabricated to job conditions. Light—Easy to place.



LACLEDE STEEL COMPANY
ARCADE BUILDING, ST. LOUIS, MO.

BOOKS ON HOUSING AND PLANNING



REINHOLD PUBLISHING CORPORATION
330 WEST 42nd STREET
NEW YORK 18, N. Y.

For the best and latest information on town planning and housing, read these two new books . . . . . .

HOUSING and CITIZENSHIP

A Study in Low-Cost Housing

By

Major GEORGE HERBERT GRAY,
F.A.I.A., A.I.P.

Consultant in Architecture and City Planning
New Haven, Connecticut

With a Foreword by
C. E. A. WINSLOW

Professor of Public Health,
Yale University

Here is an important new book which comes directly to grips with the double-barreled problem of large-scale, low-cost housing and city planning!

The commanding position now occupied by these problems and the necessity for their immediate solution makes this a particularly timely and helpful review of the vital situation that confronts us today.

Major Gray's book is devoted to a thorough and comprehensive analysis of all the factors involved in today's problem; it presents a detailed and well-balanced plan for both urban and rural redevelopment in America, backed up by the author's intimate acquaintance with low-cost housing here and abroad. Written with rare judgment and vision, this book should fill a very real and lasting place in the history of the American housing movement.

275 Pages 12 Graphs 47 Plates

Price $7.50

NEW CITY PATTERNS

***By* S. E. SANDERS**
and
A. J. RABUCK

Better planned cities will evolve gradually from the present ones only when realistic methods are consistently applied. The authors give much attention to parks, greenbelts and wedges, playgrounds and community shopping and parking areas. Emphasized also is the necessity for providing non-stop highways for through traffic, which must not encroach on residential streets.

An outstanding feature of the volume is its profusion of illustrations, ranging from the seamy side of slum and blighted areas, through medium and low-cost housing projects, to the more ambitious developments to be expected in the reasonably near future. The text is devoted to able discussions of the organization of metropolitan planning commissions and the methods to be followed to insure that each new improvement will coincide with a carefully predetermined plan.

Distinguished architects who read the manuscript predicted an enthusiastic reception for this timely book. It is the type of reading to which the informed public is turning more eagerly than ever.

215 Pages Profusely Illustrated

Price $8.00

ORDER FORM

REINHOLD PUBLISHING CORPORATION • 330 West 42nd Street, New York 18, N. Y.
Please send me the books checked:

☐ Housing and Citizenship, $7.50 ☐ New City Patterns, $8.00

☐ Payment enclosed ☐ Send C.O.D.

Also send me Free 1946 Book Catalog "LET'S LOOK IT UP."

Name .....

Address .....

City and State .....

OBSERVATIONS

IT HAS BEEN VERY REFRESHING TO HEAR FROM A NUMBER OF ARCHITECTS RECENTLY THAT THEY DON'T BELIEVE IN SOLICITING WORK — "The good clients come to you." If this were true generally the profession would have reached the stage comparable to the practice of medicine that has always been its goal—the standing we pretend we have when we frown on advertising.

•

WE KNOW THAT STATE OF AFFAIRS HASN'T ARRIVED WHEN A LETTER SUCH AS THIS COMES TO US:

"We are a group of young men (about nine-tenths ex-G.I.) who want the most and best housing and living conditions for bringing up our families for the least expenditure of money.

"It is our belief that the cheapest and best method of building would be a separate development into which could be incorporated several new ideas which, for financing and individual house plans and community layout, have been successfully completed in other sections of the country. Some things which occur to us are:

What general plan would mean the least expenditure in streets, lighting, sewerage, etc.?

What are the best and cheapest individual plans and materials for each house, to permit minimum initial building and allow future expansion?

What services could be supplied by the community (such as a central heating plant) to reduce the total cost of these services and also the cost of the individual homes?

"Our initial group could consist of ten to fifteen families and could readily be expanded to perhaps thirty to fifty families. Average income runs $2500 to $4500 and each family would consist of two adults and two or three children.

"Any information and advice which you can offer will be received with our heartfelt thanks."

•

OBVIOUSLY THE ONLY REPLY WE COULD MAKE TO SUCH AN APPEALING CALL FOR HELP WAS TO SAY, "GET AN ARCHITECT." At the moment, with lines of people waiting to get into the architects' offices to apply as clients (or are our friends exaggerating?) it may seem silly to bring the subject up. And yet, here is someone who sounds as though he might be a "good" client, and I feel sure there are architects in the gentleman's vicinity who would be delighted to meet him. The designer who would be interested in tackling this sort of social planning problem and the client who needs advice both are suffering because they haven't gotten together.

•

WHICH BRINGS US BACK TO THE OLD NEED FOR IMPRESSING ON THE GENERAL PUBLIC THE VALUE AND IMPORTANCE OF THE ARCHITECT. There isn't much that an individual architect can do to blow his own horn. All of the major publicity maneuvers must be thought of as group activities, and many A.I.A. chapters are doing this sort of job. The individual can't often throw his weight around in the community unless he's asked to, but another encouraging thing we hear about is that progressive designers, being smart boys who know all the answers, are being asked to talk on the radio and speak to the Thursday Afternoon Women's Literary and Garden Club. All of a sudden the town's proud of them, and they're the ones who are getting the unsought publicity. Maybe they can impress a suddenly interested public with their value, in a way that didn't seem possible a decade ago. Could it be that there is more value now than at some time in the past?

NOT ONLY THE LAY PUBLIC WRITES TO THE EDITOR FOR ADVICE. Within the profession the architectural press serves as a clearing house for technical and professional information. I don't mean the kind of letter which asks "How do you design a flat roof for a modern house?"—that scares us to death. But in one category is a letter like this one from the South:

"In the near future I hope to develop plans for a 100 room hospital. My client is interested in building the most modern hospital in this part of the country and I will need considerable reference material."

Then from New England comes an appealing request for support of a technological principle:

"We are at present trying to convince a building inspector in a small town with an antiquated building code that radiant heating for small homes is not a crack-pot idea we have dreamed up . . . may we request that you give us a helping hand in convincing him that such a system is practical and safe?"

•

APPARENTLY IMAGINATIVE DESIGNERS THROUGHOUT THE COUNTRY NEED SUPPORT, ENCOURAGEMENT, ADVICE AS THEY NEVER HAVE BEFORE. When the going gets tough, they need someone's shoulder to cry on, and when things are going smoothly they need someone to brag to. And at all times they need a medium of exchange for tossing back and forth technical experiences. Go right ahead — cry, brag, or ask. We have broad shoulders, we're good listeners, and we're not bashful.

•

SPEAKING OF LETTERS TO THE EDITOR, we have one which offers to "furnish monthly a poem on most any subject you might wish, and of length desired." We decided to pass that up.

•

THEN THERE WAS THE LADY WHO IS WRITING A BOOK ON "GOOD TASTE." She wanted us to give her photographs of six buildings and tell her which ones, if selected by her potential readers, would indicate good taste and which bad taste. When we tried to explain to her that architecture couldn't be judged that simply, a glazed look came in her eyes and she rushed off to find a more sympathetic source. Maybe we're not so helpful after all.

Thomas H. Creighton